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International Differences in Wage and Nonwage Labor Costs

Luis A. Riveros

Labor costs declined significantly in most developing countries in the 1980s. The impact of declining labor costs on manufacturing employment was statistically significant — and bodes well for the growth of nontraditional exports.

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The ratio of nonwage labor costs (for social security, pensions, vacation days, severance compensation, and the like) to direct wage costs is proportionately higher in Europe and Latin America than in Asia and Africa — largely because workers there are protected more by regulations.

The distortionary growth of labor costs because of increasing nonwage costs is not common in the less developed countries (LDCs), however. The author of this paper found that international differences in labor costs are attributable largely to differences in labor productivity and capital-labor ratios.

He also found that labor costs declined significantly in almost all LDCs in the 1980s, and that the impact of declining labor costs on manufacturing employment was statistically significant — and bodes well for the growth of nontraditional exports.

This decline was not accomplished through deregulation of the labor market — the ratio of nonwage costs to labor earnings remained persistently significant — but mainly through macroeconomic factors, particularly inflation and nominal devaluations.

The opportunity cost of labor was distorted more by nonwage costs in the poorest LDCs, where the small size of the formal sector contrasts with the relatively high degree of worker protection. The countries that do better in manufacturing exports seem to have both relatively few labor market regulations and, in the long run, rising labor costs.

Adjustment programs that favor export promotion and higher labor mobility should probably also favor reducing government intervention that increases labor costs. Nonwage costs do not seem to be the most distortionary labor market factor in LDCs, however. Job security laws and regulations — by reducing worker mobility between labor and agriculture — permit manufacturing labor costs to increase. This presents a major difficulty in carrying out industrial adjustment based on opening up the economy and realigning the exchange rate.

International differences in labor cost levels are important, especially when one compares LDC and industrial economies. But differences between labor cost levels in terms of per capita output are not so large. This suggests the importance of different capital-labor ratios.

This paper is a product of the Macroeconomic Adjustment and Growth Division, Country Economics Department, Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Raquel Luz, room N11-061, extension 61762 (56 pages with tables).

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by
Luis A. Riveros

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I. Introduction

Export promotion is paramount to macroeconomic adjustment programs aimed at achieving stable and self-sustained growth in LDCs. Exchange rate policies and market deregulation play a prominent role in those programs, in combination with other ad-hoc schemes aimed at promoting non-traditional exports. Two basic assumptions supporting these programs are: (a) that LDCs are internationally competitive with regard to non-traditional exports -- particularly labor-intensive manufactured exports -- and (b) that deregulation of the labor market would allow the achievement of both greater labor mobility and wages reflecting the opportunity cost of labor, thus being a crucial factor in promoting non-traditional exports.

Knowledge of total labor costs is important in designing adjustment programs and in assessing the degree of competitiveness of LDCs' exports, while at the same time considering the likely important role played by government intervention in the labor market. Expenditure-switching policies combined with expenditure-reduction policies and market deregulation aim at a decline of total labor costs in terms of tradables -- particularly exportables -- to foster inter-industrial labor reallocation. Even though a comprehensive analysis of this expected labor market response in the adjustment would require the use of a thorough concept of labor costs which includes non-wage costs of labor, studies are usually based on standard measures of wages. The study of observed changes in NWC during periods of adjustment and on the likely significant impact of total labor costs on non-traditional exports constitutes a priority in the research agenda on labor markets and trade.

Labor markets in LDCs are segmented mainly due to the role played by government intervention and the existence of a significant body of regulations on wages and employment. In general terms -- and in association with

conditions like large scale production, complex administrative procedures and homogeneity in the presentation of the final product -- the industry which produces non-traditional exports is part of the formal sector of the economy. Hence, although non-wage costs of labor mainly relate to the formal labor market, analysis of their role is extremely relevant in assessing the international competitiveness of non-traditional exports.

In this study, we analyze prevailing regulations on non-wage costs of labor in a set of 21 LDCs, and present empirical evidence on the quantitative significance of non-wage costs of labor across countries. The main purpose of this study is to compare total labor costs among countries and to analyze factors underlying observed international differences through time. With that purpose in mind, we compute total labor costs in dollar terms for the period 1965-85 and we compare the set of LDCs included in the study with some industrial economies. We examine the enforcement of non-wage regulations in the sample of LDCs--and we analyze the degree of distortion they likely create in the context of their time trends and in connection with the performance of manufactured exports.

The set of countries in the study includes LDCs in Africa, Asia, Latin America and Europe. For comparison purposes we also use eight industrial countries from Europe, America and Asia. The countries covered in the study are:

Latin America	South Asia	Africa	Europe	Industrial Ec.
Argentina	India	Kenya	Greece	Austria
Brazil	Pakistan	Morocco	Portugal	France
Chile	Sri Lanka	Malawi		Germany
Colombia		Nigeria		Spain
Mexico	East Asia	Tanzania		Sweden
Peru		Zambia		United Kingdom
	Hong Kong	Zimbabwe		Canada
	Korea			USA
	Singapore			Japan

The structure of the paper is as follows. In Section II we discuss some basic methodological issues as regards the empirical measurement of wages and non-wage costs. Section III presents a brief description of the previous work in the area, which indicates the lack of comparative studies on labor costs in LDCs. Section IV discusses the evidence with regard to the ratios of non-wage costs to wages and non-wage costs to per capita income, while in Section V similar analysis is done in connection with total labor cost levels. The enforcement of non-wage cost regulations in the countries is analyzed in Section VI, with their likely distortionary role in terms of time trends and across countries examined in Section VII. Section VIII examines international differences in labor cost levels and in labor costs expressed in units of per-capita output. Finally, some conclusions are presented in Section IX.

II. Basic Methodological Issues: Measuring Wage and Non-Wage Costs

Use of a similar concept of labor costs across the countries covered in this study is crucial to a proper interpretation of the results. In fact, in comparing labor costs across countries, consideration of the definitional content of the statistical information on wages and non-wage costs and its coverage in terms of industries is important.

The empirical data used in this study for all the countries correspond to the manufacturing sector. The basic information was obtained from national sources and originates in manufacturing surveys containing wages and data on other payments to labor. Given that segmentation is a distinctive feature of labor markets in LDCs, it should be noted that these data correspond to the urban formal sector of the labor market; i.e., the one covered by different types of regulations and labor protection laws. Thus, this information does not necessarily describe the level -- nor probably the

trends -- of labor incomes in the urban informal sector and agriculture. As said above, analysis of total labor costs is extremely relevant with regard to non-traditional exports, which is an industry included almost entirely in the formal sector of the economy in LDCs.

The information on labor costs used in this study corresponds to production workers (i.e., those directly involved in production). In some countries, available statistics report wages data for this specific group of the labor force. In others, and due to lack of information concerning only production workers, we had to resort to data corresponding to all blue collar workers in the manufacturing sector. It is important to note that the wage data used in this paper correspond to an average for the entire manufacturing sector, not only to the group of export industries, a fact that may prove crucial in interpreting some comparative statistics. Data on non-wage costs of labor were obtained from different national and international sources, thus reflecting unaudited and actual payments and contributions to several programs associated to employment of a worker in formal activities. In general terms, however, our empirical labor cost data are comparable among countries, and they can be interpreted as the cost of unskilled labor in LDCs' manufacturing.

Availability of comparable total labor costs among countries has preoccupied international agencies for a long time [see, for instance, ILO (1983)]. However, a standard compilation of similar labor cost data for LDCs to perform empirical comparisons is non-existent. Most sources report measures of LABOR EARNINGS, which include all the gross payments made to the workers before any deductions.[1] In this paper, we use this concept as synonymous with WAGE COST OF LABOR (WC).

Given that employers also face other outlays in employing labor, it is useful to distinguish between two other concepts. First, that of TOTAL

LABOR COSTS, in which employer contributions to legally required employees' benefit plans and other prevailing taxes existing on payroll or employment are added to labor earnings. Among those, the main statutory payments are contributions to certain funds, which are generally expressed as a proportion of total labor earnings.[2]

Second, we use the concept of labor costs net of labor earnings as a synonym of NON-WAGE COSTS OF LABOR (NWC). It is important to note that, because of lack of adequate information, we do not account for other costs associated with employment -- like training and hiring costs as well as outlays associated with the provision of certain plant facilities for the use of the workers. Consideration of these items would form the concept of COMPREHENSIVE LABOR COSTS.

In order to construct the series of total labor costs presented in this paper, we used information on wages and non-wage costs of labor provided by national sources. However, for the latter, we complemented these data with information from international agencies (e.g. ILO or BLS)[3] concerning social security contributions or other regular payments made by employers in LDCs.[4] The information arrived at is basically comparable among LDCs, given that we used the same definitions with regard to WC and similar NWC items. A basic difference, however, appears in connection with the industrial countries, in whose case we reproduced the information prepared by the Bureau of Labor Statistics of the U.S. Department of Labor (BLS), in which the implicit cost of days of vacations and the value of vacations bonuses are not included in the calculation of NWC.

The labor cost levels presented below are in dollars, and they correspond to WC and NWC expressed in hourly terms.[5] Data on hourly labor costs in each country are also reported in domestic currency units. In order

to convert that into similar units, we used the Atlas exchange rate provided by the IBRD (see Appendix 2), which corrects for certain distortions in exchange markets and allows us to compare the trends of labor costs and per capita GDP. We did not convert our labor cost data to dollars through any purchasing-power-parity exchange rate, because our data are relevant to study international competitiveness of production, and the product embodying these labor costs must compete on the basis of the actual current exchange rate in each country.[6]

III. Previous Work in the Area.

International comparisons of labor costs have remained an important issue in applied economics. Early, Nelson (1965, 1968), Bardhan (1965) and Nerlove (1967), highlighted some key analytical assumptions involved in comparing wages and labor productivity between two economies. Research soon expanded to more specific questions regarding international dispersion of wages. Krueger (1968) explained income differentials on the basis of differences in human capital across countries, an issue also addressed by Kothari (1970) and Papola & Bharadwaj (1970), as well as by Mitchell (1968) in the context of modeling labor productivity.

Problems encountered in constructing a comparable international data base for labor cost comparisons were pointed out early by the Bureau of Labor Statistics [BLS (1966)] [see also, Shelton & Chandler (1963)]. More recently, Bashir (1979) discussed comparisons of labor market trends in LDCs and insisted on the necessity of further efforts to improve wage data, an issue also highlighted by Krueger (1987) in analyzing employment, international competition and trade policies. Although several ILO recommendations aimed at improving methodologies of data collection,

availability of adequate information in LDCs is still a major stumbling block for further research in connection with international comparisons [Capdeville & Alvarez (1982)].[7] This lack of relevant statistics has also prevented the completion of more comprehensive analyses on the role of government intervention in the labor market, and of empirical supply functions of non-traditional exports [Krueger (1987), Faini (1985), Riveros (1989)].[8]

A crucial issue raised in recent research [see, for instance, Krueger (1987), Lipsey et.al. (1982), Ranis (1985)] deals with the presumably high negative effect of increasing labor costs on non-traditional exports. Empirical research in this area and in assessing the role played by labor market distortions on export supply, has been hindered not only by data availability but also by lack of understanding of the structure of the labor market in LDCs. For instance, government regulations may introduce factor market rigidities, in whose presence almost anything could happen to trade flows and output composition [see, i.e. Jones (1971), Neary (1981) and Magee (1976)]. Similarly, as indicated by Krueger (1987) and Lipsey et.al. (1982), the importance of labor market distortions may also be crucial in modeling foreign investment and choosing technology [see also Behrman (1982)]. All this suggests that conducting research aimed at comparing labor cost levels among countries and at assessing the impact of labor costs on non-traditional exports constitutes a significant challenge.[9]

IV. Non-Wage Cost Ratios

The relative importance of NWC is highlighted by figures included in Table 1. Owing to its institutional nature, the ratio of NWC to wage costs (NWC ratio) for any given country does not change a great deal through time. However, in the case of Latin America -- mostly due to the occurrence of

structural changes with regard to the degree of government intervention in the labor market -- more significant changes are observed through time on a country basis. The variety of this ratio across countries is still more significant, and may be indicative of the degree of distortion introduced by government intervention in terms of the cost of labor in formal labor markets.

In general, simple regional averages reveal that NWC ratios are higher in Europe and Latin America than in Asia and Africa. Latin American countries such as Argentina, Mexico and, notably enough, Colombia, have highest NWC ratios in the sample of LDCs. Chile, after social security reforms implemented during the late 1970s, attained a NWC reduction of one half (i.e., from 51 to 26 percent of total labor earnings between 1975 and 1980). In contrast, Colombia's NWC ratio has been growing significantly since the 1970s, with extremely stringent regulations on severance compensation (see, IBRD-ILO, 1982). In Argentina, the observed increase in the NWC ratio is due to employer's contributions to housing and health benefits programs created after 1975.

With the clear exception of Singapore and Hong Kong the NWC ratio in the Asian countries has remained fairly stable for the last 20 years, thus also being very similar among South Asian and East Asian countries. In general terms, the NWC ratio in Asia is about half that observed in most Latin American countries. It should be emphasized that in most Asian economies, particularly Hong Kong and Korea, there are not many programs demanding employers' contributions; even social security payments are discretionary, although most employers contribute a voluntary five percent of total wages to pension funds. Specifically, in East Asian economies, there are only a few regulations on hiring and firing.

In Africa, computed NWC for this study are mostly associated to vacation days and contributions to social security schemes. In the latter case, however, contributions vary usually between three to five percent of total labor earnings. In general, NWC of labor associated with more sophisticated social programs are nonexistent in Africa. This would suggest that the formal labor market in African countries appears to function more freely than in other LDCs, particularly Latin America.

A good measure of the degree of protection awarded by NWC regulations in LDCs is a comparison of NWC levels with the per capita income prevailing in each country. Assuming that in a cross country examination per capita income is a satisfactory proxy for the shadow price of labor, a comparison with observed NWC of labor would provide an idea of the distortion a certain protection awarded to formal sector workers imposes relative to the degree of economic development of any given country. Thus, we expressed the per capita GDP in hourly terms,[10] and we calculated the ratio: NWC levels to hourly incomes which can be examined across countries in Table 2, (Cols. 2)

It can be seen that the ratio NWC/per capita income introduces some changes from the original ranking we described above (Table 1, Cols. 1), in which Latin American countries exhibited the highest NWC relative to wage levels. In fact, India now appears with the highest ratio of NWC/per capita income, being closely followed by Zimbabwe, Greece and Morocco.[11] Interestingly enough, most of the African countries, with the exception of Nigeria, appear to have "high" NWC relative to the corresponding shadow price of labor, thus likely suggesting a large distortion and an important degree of segmentation of the labor market among formal, informal and rural sectors. However, in Latin America, although Argentina and Colombia rank among the countries with higher ratios of NWC to per capita income, the former one is

not characterized by a high degree of segmentation, thus suggesting that this is not always the crucial factor in play.

In assessing the importance of NWC of labor in LDCs, a comparison with the situation in industrial economies seems appropriate. According to data appearing in Table 1, USA, Canada and, notably, Japan, are characterized by lower NWC ratios than those observed in many LDCs, both with respect to wages and to per capita incomes. This evidence would seem to support the contention that formal labor markets in LDCs are likely subject to distortionary intervention and that deregulation will significantly reduce total labor costs, leading to greater competitiveness of their production in international markets. However, this is not always the case in comparing LDCs and developed economies, since most European industrial countries are characterized by substantially higher NWC ratios resulting from existing policies which finance several welfare programs. Hence, it is not convenient to arrive to any general conclusion regarding LDCs as a whole; examination of total labor costs may provide more definitive evidence in comparing LDCs and industrial economies.

V. Total Labor Cost Levels.

Simple regional averages of total dollar costs of labor are evidence of widening differentials between industrial and Latin American countries (Table 2). In fact, in 1975 the average labor cost in Latin America was 21% of that observed in Europe, 16% of the one prevailing in USA and 33% of the labor cost level in Japan. In 1980, these averages were, respectively, 17, 17 and 28, while in 1985 they corresponded to 17, 11 and 19. Similarly, unit labor costs in Africa have experienced a decline over time with respect to the levels existing in the USA, Japan and, more moderately, in Europe. Thus, a

long term decline of comparative labor costs levels has occurred in Latin America and Africa as well as in South Asia. In contrast, East Asia experienced a significant increase in total labor costs with respect to Europe and a lesser one with respect to the USA and Japan.

Simple averages as seen in Table 2 obscure the differences observed within each region, with regard to both levels and time trends. Most Latin American countries experienced an important currency overvaluation in the early 1980s, which usually reflected itself in higher dollar labor costs. The subsequent decline of unit labor costs has been dramatic in Chile, Mexico and Peru, due to substantial macroeconomic strains after 1982 and the adoption of significant micro reforms in the cases of Chile and Mexico. Argentina adjusted labor costs downwards -- but only since 1987 -- mostly due to exchange rate corrections, while Colombia and Brazil, which did not suffer dramatically rising labor costs during 1980-82, displayed more stable levels from 1982 onward. Similarly, in Africa, some countries exhibited a sharp increase in labor costs during the early 1980s, and a subsequent decline during the remaining years. This was the case of Zimbabwe, Zambia and Morocco. The other African countries experienced steadier labor costs during the period being analyzed.

The growth in labor costs observed in East Asia relative to the industrial economies is probably associated with productivity growth and export expansion in the presence of full employment, as opposed to a higher degree of intervention in the labor market. However, in the case of Singapore as observed in Table 1, there has been a persistent increasing trend in NWC ratios throughout time. India, Pakistan and Sri Lanka are characterized by a very steady trend of labor cost levels in nominal dollars over the long run.

The degree of competitiveness of each country's labor costs can be evaluated on the basis of labor costs deflated by the wholesale price index of the USA (Table 3),[12] which constitutes an indicator of cost competitiveness relative to international production costs. An important conclusion derived from those results is that in contrast with the steady increase of real labor costs observed in the USA, most LDCs have undergone a significant drop in real labor costs in the 1980s. In fact, in Latin America, fluctuating real labor costs levels in the 1970s have been generally followed by a sharp decline during the 1980s, a trend also seen in Greece and Portugal, although in the latter case this drop occurred since the mid-1970s. The increase of real labor costs during the 1970s and the observed decline during the 1980s also applies to African countries, as well as to India and Pakistan. An exception to this common trend is Sri Lanka, a country that suffered a persistent decline in real labor costs during the 1970s and 1980s. Korea, Singapore and Colombia have experienced a steady increase, while costs in Hong Kong have stabilized after the continuous rise prior to the 1980s. Thus, countries which are more export-oriented have been able to support rising labor costs, at levels still competitive with those observed in industrial countries (Table 2).

Figures in dollar terms for LDCs are notably influenced by periods of overvaluation/undervaluation of the exchange rate, which must be considered in observing the results with regard to time trends. In analyzing real labor costs in domestic currency, both in terms of the CPI and the WPI in each country (Appendix 2), very different dynamic patterns appear in the set of countries. For instance, Brazil, Korea, Colombia, Greece, Singapore, Hong Kong, Pakistan and Zimbabwe are characterized by a clear growing trend in the long-run. Argentina, India, and Zambia are characterized by practically no

growth in real labor costs over the long run, while Nigeria, Malawi, Morocco, Portugal, Sri Lanka and Mexico show significant fluctuations. It is also clearly seen that Chile, Peru and Tanzania (if one looks at the results in terms of the CPI) are the countries that underwent a steady decline in the period being analyzed. In general, real labor costs have declined in LDCs after 1981, with the clear exceptions of Colombia, Greece, Pakistan, Singapore, and Korea (Table 2d).

Analysis of relative changes in labor costs is important in connection with the costs and benefits of export oriented strategies. In another paper we show the high negative correlation existing between changes in manufactured exports and changes in labor costs relative to the price of home goods, after controlling for the effect of other relevant variables (Riveros, 1989). It has also been observed that, in general, countries with steadily growing labor cost levels over time -- like Korea, Singapore and Hong Kong (Table 2d) -- are also characterized by a relatively large share of manufactured exports in total exports (Riveros & Mateus, 1988). However, Morocco, Greece, Brazil, and Portugal are also countries characterized by a high share of manufactured exports in total exports, but by stagnant average labor costs throughout time (Table 2d). In examining the trend in aggregate manufactured exports with observed labor cost levels, it becomes evident that countries showing a steadier growth in labor costs (East Asia) are at the same time the ones with a stronger export dynamic. This suggests that even though labor costs may negatively affect export growth, a better export performance is also associated with more dynamic wage growth over the long run. Moreover, an index of manufacturing employment in the countries under analysis (Table 4), suggests a high correlation between employment growth and better export performance, as clearly shown by the cases of Southeast Asia and Brazil.

The influence of changes in labor costs on manufacturing employment is significant (and negative) in most of the countries where we were able to estimate a labor demand function (Table 3a). This suggests that most of the observed changes in labor cost levels would be associated with changes in labor productivity. In fact, in the statistical exercise included in the appendix the effect of a variable indicating distortionary intervention in the labor market -- the ratio NWC to per capita income -- produced significantly negative parameters only in the cases of Mexico, Colombia, India and Nigeria. It is interesting to note that these countries are characterized by different trends in labor costs through time, not necessarily by an increasing one.

The effect of NWC of labor on non-traditional exports is another important issue. To the extent that higher NWC may reflect a distortion which negatively affects export growth, increasing labor costs would lead to deteriorating exports and employment. An empirical cross-country analysis on this issue is presented in Riveros (1989), where the degree of distortion is measured by the ratio NWC to per capita income. Thus, by pooling countries in a group characterized by a restrictive labor market regime -- as measured by the burden impcsed through job security regulations -- versus another group of countries characterized by a more liberal regime, the conclusion is that the effect of higher distortionary NWC negatively affects exports. This result is indicative of the importance of NWC of labor in analyzing the relationship between non-traditional exports and labor markets, and also suggests that statistical analyses must account for the entire set of regulations and financial obligations existing in LDCs' labor markets.

Table 5
Average Value Index of Manufactured Exports from LDCs

	L.AMERICA	AFRICA	ASIA	EUROPE
1965	100	100	100	100
1970	189	264	203	227
1975	536	408	685	595
1980	1361	710	1793	918
1985	1993	1532	3517	911

Source: Riveros & Mateus (1988), Table 2.

VI. Enforcement of NWC Regulations.

Analysis of the actual enforcement of NWC regulations requires understanding the institutions affecting the operation of labor markets in LDCs. In fact, in analyzing the impact of NWC on employment and exports, examination of mandatory payments is not enough, given the likely existence of a varying degree of enforcement across countries and through time. A pure quantitative analysis of persistent wage differentials within the economy to assess the actual enforcement of NWC is not sufficient because there would still be the problem of sorting out labor cost increases that are endogenous to a growth process from those that are imposed through government regulations. Thus, quantitative examination of this issue is severely limited by lack of adequate empirical data. Consequently, in order to test the idea that there are enforcement mechanisms in most LDCs which keep labor cost levels above the supply price of labor, we must resort to more indirect evidence

One major characteristic of formal labor markets in LDCs refers to the existence of very detailed job security regulations. Recently, Lucas & Fallon (1988a,b) have investigated this issue in India and Zimbawbe, and they

concluded that enforcement of job security laws has been detrimental to labor mobility in both countries, permitting labor costs in manufacturing to increase. In the case of Mexico, Riveros (1988a,b) found that job security laws present a major difficulty in carrying out an industrial adjustment based on opening up the economy and exchange rate realignment. Reform in this area in Chile during the 1970s was considered crucial by entrepreneurs facing a more competitive environment associated with substantial trade reforms (Corbo 1985). For Zambia, Colclough (1988) reports the existence of a demanding set of regulations enforced by the government, while Riveros (1987), Collier & Riveros (1987), Collier & Lal (1986) and Collier (1988) suggest the same type of problems are prevalent in the Philippines, Nigeria, Kenya and Tanzania, respectively. Likewise, Pollack (1988) argues that these regulations are predominantly enforced in most Latin American countries.

By examining the Price-Waterhouse reports on prevailing job security regulations in the countries covered in this study, a ranking can be produced with regard to the obligations of employers when dismissing workers.[13] According to this, Korea, Singapore, Hong Kong and Nigeria rank among the countries with lesser requirements. On the other hand, Argentina, Colombia, Mexico, Kenya, India, Greece and Portugal, are among those where job security regulations are extremely stringent. By contrasting these results with those in Tables 1 and 2, there seems to be a very high correlation between the existence of relatively high NWC ratios and coercive job security laws. As commonly stated in Price Waterhouse's reports, compliance with the law is guaranteed through several controls imposed by the political authorities as well as by union activities. Thus, it is a reasonable hypothesis that NWC regulations are also significantly enforced in the countries studied.[14]

In general terms, and as argued earlier, NWC and job security regulations are a dominant feature of formal labor markets. According to estimates of ILO (Riveros, 1988c), the size of the formal urban economy in Latin America is about 60 percent of total employment, the public sector constituting about half of this. In South Asia, this proportion is even smaller, as well as in the case of African countries, as suggested by the high share of agricultural production in GDP.[15] Thus, taking into account the relative size of the urban formal sector, it is also a sensible hypothesis that enforcement of all legal labor regulations imposed on the formal manufacturing sector is not at all difficult from the viewpoint of the required administrative machinery. Finally, it is important to note that in almost all countries, procedures exist which allow workers to initiate legal demands if regulations are not complied with by the firms.

In order to test for the likely significant distortionary effect of NWC of labor one may use the existing differential between labor costs -- which are basically urban-formal wage plus NWC items -- and agricultural wages. If enforcement of NWC keeps labor costs (LC) growing substantially above agricultural wages, one could reasonably argue that this is indicating the existence of a distortion. However, the existence of labor costs growing faster than agricultural wages (WA) may also be due to more rapidly growing productivity in manufacturing as well as to faster human capital growth in urban areas which would be reflected in higher wages. We conducted a simple analysis of this issue by exploring the statistical relationship between the ratio (LC/WA) and the ratio formed by the average labor products in manufacturing and agriculture. We first regressed the ratio (LC/WA) against a time trend in order to test the statistical significance of observed growth rates. If a statistically significant growth trend for a given country is not

simultaneously accompanied by a positive significant relationship between (LC/WA) and the ratio of average labor products in the two sectors, one may argue that NWC or other distortionary factors keep urban labor costs growing substantially above the opportunity cost of labor.

The regression of the ratio (LC/WA) against a time trend produced a negative or zero parameter in 8 countries, while in Colombia, Portugal, Korea, India and Tanzania the trend was significant and positive. The econometric estimates of the regression of the ratio (LC/WA) against the ratio of average labor products produced very mixed results. In 5 countries (Argentina, Mexico, Sri Lanka, Korea and Kenya) we found a significant positive parameter smaller than 1 thus suggesting the trend in relative labor cost is in fact associated to changes in productivity differentials. The estimated parameter was negative in Colombia and India, and insignificant in 6 other countries, thus leaving room for the argument that some inefficiencies are likely involved. Hence, in most of the countries there is not any clear time trend in relative labor costs which would suggest that enforcement of NWC introduces distortions in the form of an increasing wedge between labor costs in both sectors. In the case of Korea, we found a significant time trend which may be associated with growing labor productivity -- as indicated by the regression of (LC/WA) on the ratio of average labor products -- thus being possible to argue that it responds to market forces. In Portugal, Colombia, India and Tanzania the observed increasing trend of the ratio (LC/WA) is not explained by relative changes in average labor products, thus suggesting that enforcement of NWC of labor has played a significant role in increasing labor cost differentials in these four countries.

VII. Labor Market Distortions and NWC Regulations in LDCs.

There is an inclination to think of NWC regulations as "distortions" in the sense that they would introduce a wedge between the equilibrium (notional) wage and the actual prevailing labor cost. However, on the side of the entrepreneur and under certain conditions related to his indifference with regard to paying labor in terms of different items, it may be possible that NWC are not the result of an optimizing condition but that rather they respond to an exogenously imposed distortion. Similarly, on the side of the worker and depending upon his intertemporal rate of discount and degree of risk aversion, a certain NWC level associated to deferred payments or insurance systems may not be at all distortionary. In practice, however, what matters is the distortion introduced by NWC as regards the differential between actual labor costs and the opportunity cost of labor. Thus, the existence of labor costs above the level corresponding to the shadow price of labor would imply a distortion disregarding the allocative role of relative scarcities and introducing quantity constraints in the employment decision of sectors covered by distortionary laws.

A comparison of labor costs and the per capita income in each of the countries is important in examining the probable distortion created by non-wage regulations. The ratio of labor costs to per capita incomes is affected by the relative size of the urban formal sector and thus by the share of agriculture in their economies. A relatively high ratio may be interpreted as an existing distortion, in the sense that labor costs in the formal sector do not reflect the opportunity cost of labor resulting from enforcement of NWC and/or existence of constraints to labor mobility. Hence, with the same degree of enforcement a decrease in the ratio NWC to per capita income would reflect a decline in the share of agriculture, and a more competitive labor

market in the sense that prevailing labor costs in the formal sector approach the average opportunity cost of labor.

As seen in table 7, the African countries, India and Pakistan have labor costs substantially above their corresponding per capita income. Greece, Colombia and Argentina also have a range of labor costs twice the hourly per capita income, while the rest of the Latin American countries are much closer to the ratios observed in Asia, particularly Korea and Sri Lanka. Furthermore, the trend in almost all African countries (with the exception of Zambia and Zimbawbe) as well as in Brazil, Mexico, Peru, Portugal, India and Pakistan, has been towards a closer relationship between labor costs in the formal sector and the prevailing average social opportunity cost of labor. This coincides with the observed decline in the size of the agricultural labor force between 1970-1980, which, in turn may reflect an increase in agricultural productivity and in intersectoral labor mobility. Nonetheless, the only cases where this "distortionary ratio" has been notably increasing are Greece and Zambia.

These results are in agreement with the conclusion arrived at by Fallon & Riveros (1987) regarding regulations and minimum wages in LDCs. In fact, the observed declining trend in the ratio of labor costs to per capita incomes throughout time in almost all LDCs indicates a higher degree of competition and integration of their labor markets. However, the significant differences still seen in this ratio across countries are striking. On the one hand, it is clear that a larger ratio may be an indicator of a distortion that, though decreasing in time, is probably hindering the achievement of a more adequate labor allocation. On the other hand, it is important to consider that we are dealing with averages and that the existing wedge between labor costs in manufacturing and average per capita income is also responding

to differences in human capital as well as to the share of agriculture in the economy. As revealed by the relative importance of the agricultural labor force in the countries being analyzed (Table 6), countries with a greater wedge between labor cost and per capita income levels possess a more significant agricultural sector (and probably, also a larger informal urban sector), leading to the existence of important differences in education and specific human capital. In the absence of statistics on distribution of education across sectors, this issue cannot be more formally analyzed.

To further analyze the distortionary effects of NWC levels in the economy, we regressed a time series of non-wage cost ratios against the rate of GDP growth. If NWC increase in a way significantly out-of-line for the opportunities provided by economic growth, one would expect to obtain a significant and positive parameter greater than one, which is what we found only in the case of India. The relationship approached zero in 80 percent of the countries (with Brazil and Colombia having significant negative parameters). At the same time, with the exception of India and Colombia, a regression of NWC ratios against a time trend also produced coefficients statistically equal to zero. This evidence seems to provide further support to the contention that in most LDCs the existence of NWC does not necessarily constitute a distortionary factor. The evidence provided in the Appendix also demonstrates that the effect of the ratio NWC to per capita income -- an indicator of the distortion introduced by NWC regulations -- is not found significant in explaining the performance of the demand for labor in LDCs, with the exception of Colombia, India, Mexico and Nigeria. This result was also confirmed when a pooling of countries characterized by high and low NWC ratios was used to test for the statistical effect of increasing NWC on employment.

VIII. International Differences in Labor Cost Levels.

A comparison of labor cost levels between LDCs and industrial countries raises some questions regarding the pattern of the international allocation of labor in a world characterized by growing international trade. In fact, there is evidence of very persistent and significant labor cost differentials among LDCs and industrial countries through time. In particular, and in examining evidence like that produced by Lipsey et.al. (1982) -- in the sense that multinationals tend to choose location partly due to consideration of labor costs[16] -- one may wonder about the factors working against a marked trend towards equalization of labor costs across countries. Naturally, there are many issues involved here, like trade restrictions in industrial economies, constraints to foreign investment and high country-risk in LDCs, unstable macroeconomic environment, etc. For the sake of keeping this analysis within the domain of labor market issues, we will concentrate on aspects likely influencing labor productivity.

One factor explaining the persistent differentials in labor costs between LDCs and industrial economies, as well as within the set of LDCs, is that labor is not a homogeneous factor. In fact, the average productivity of labor, which depends on the capital stock and quality of both capital and labor among other things, may significantly differ among countries. Thus, considerable differences in capital labor ratios or in the quality of productive factors may result in significant differentials in labor productivity across countries. If capital labor ratios affect differentials in labor productivity among countries, the trend to equalize labor cost levels through larger investment may be expected.

In order to carry out a comprehensive analysis of this hypothesis and in order to account for all the variables affecting labor productivity, one would be required to study total factor productivity and factors explaining international capital flows. We will limit ourselves to the alternative of examining labor costs per unit of output which can shed some light in terms of a preliminary analysis of international cost differentials.

In Table 8 we include the ratio formed by hourly labor costs and per capita production in formal sector manufacturing for 1970, 1975, 1980 and 1985, which is interpreted as labor cost per unit of production.[17] It is noteworthy that this ratio corresponds to the labor share, which is affected by prevailing differences in capital labor ratios among countries. The trend observed in most of the countries indicates a decline in total labor costs relative to per capita production in manufacturing (labor shares). According to the data, the only clear exceptions to this trend are Greece, Colombia, and possibly Morocco, Korea, and Austria. This declining trend is most likely associated with falling real labor costs, as it is, for instance, observed in Table 2d for the case of almost all LDCs with the exceptions of Colombia, Greece, Korea, Pakistan, and Singapore. Thus, in the cases of Greece, Colombia, and Korea the increase in real labor costs is accompanied by increasing labor shares, which supports the idea that changes in labor costs are a major factor influencing the behavior of labor shares through time.

A second observation based on the figures reported in Table 8 refers to cross-country differences. In general, the average value of the labor share in the case of LDCs has remained below that measured in industrial economies, thus suggesting that unskilled labor is proportionally more expensive in industrial economies. However, the observed differences between LDCs and industrial economies in labor shares are relatively smaller than

those observed in terms of labor cost levels (Table 2). Hence, even though labor shares are lower in LDCs, the resulting differential in labor costs per unit of output may not be important in order to justify increasing investment flows from industrial economies, as one would expect in observing the significant differentials in unit labor cost levels. In fact, the persistence of certain differential in labor costs among countries may be explained by fixed costs, country risk and cost of technological innovation.

One important conclusion can be derived from this discussion. In analyzing the behavior of labor costs in LDCs and industrial economies it is very important not to generalize. In fact, there are significant differences among the developing countries themselves, which, although not clearly revealed in comparing labor cost levels (Table 2), are shown through labor costs standardized by the average labor product in manufacturing. For instance, even though in terms of regional averages, Latin America is the region with lower labor shares, followed by Asia and Africa, countries like Argentina, Brazil and Mexico have higher labor shares than Korea, Singapore and Pakistan. Similarly, India, Kenya, Morocco and Tanzania are characterized by labor shares even larger than those corresponding to some industrial economies.

The above analysis must be carefully interpreted due to the aggregate nature of the statistical information used. For instance, the reliability of the information on production and employment in formal manufacturing varies notably across countries. In addition, the fact that figures in Table 8 correspond to an average for the entire manufacturing sector, and not only for the export industry, must be taken into account in assessing the existence of declining average labor products.

IX. Conclusions

The aim of this paper has been to provide empirical evidence on wage and non-wage costs data for a representative sample of developing countries. The analysis has been based on cross country comparisons of dollar labor cost levels for production workers in manufacturing. The crux of the study involves the critical effect of labor costs on non-traditional exports, and the likely distortion exerted by NWC regulations in many LDCs.

Evidence included in this paper reveals a major decline of real labor cost levels in LDCs during the 1980s, both with regard to domestic WPI and to the WPI and labor cost levels in the U.S., which is taken as representative of the industrial economies. This decline, however, has not been generally accomplished through deregulation of the labor market, as indicated by persistently significant ratios of non-wage costs to labor earnings, but mainly through macroeconomic trends, particularly inflation and nominal devaluations. The degree of distortion introduced by NWC with respect to the opportunity cost of labor is more marked in the poorest LDCs, where the small size of the formal sector contrasts with the relatively high degree of protection provided through NWC regulations. In general, it is possible to infer that the countries achieving more success in the manufacturing export industry exhibit both relatively few labor market regulations and increasing labor cost levels in the long run. This evidence supports proposals for carrying out adjustment programs favoring export promotion and higher labor mobility within LDCs, which also favor reduction in labor costs through less government intervention. However, in analyzing the degree of distortion associated with labor cost differentials between manufacturing and agriculture in any given country, we found positive statistical evidence in only a small

part of the sample. In general, we can indicate that NWC do not seem to be the most distortionary labor market factor in LDCs, since it is likely that the existence of job security laws or other regulations result in lower labor mobility, thus more significantly affecting labor cost differentials between manufacturing and agriculture.

International differences in labor cost levels are important, especially when comparing LDCs and industrial economies. However, observed international differentials of labor cost levels in terms of per capita output are not as large, thus suggesting the importance of different capital labor ratios. This finding provides a basis in interpreting labor cost differentials across countries in terms of differentials in labor productivity.

Table 1

Non-wage Costs of Labor
(percentages*)

	1965		1970		1975		1980		1985	
Latin America	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Argentina	0.33	(0.48)	0.33	(0.52)	0.35	(0.50)	0.40	(0.61)	0.40	(0.64)
Brazil	0.34	(0.60)	0.34	(0.53)	0.35	(0.39)	0.38	(0.38)	0.38	(0.42)
Colombia	0.31	(0.10)	0.43	(0.24)	0.52	(0.49)	0.62	(0.60)	0.62	(0.69)
Chile	0.38	(0.39)	0.43	(0.49)	0.51	(0.42)	0.28	(0.25)	0.25	(0.24)
Mexico	0.37	(0.75)	0.37	(0.67)	0.39	(0.71)	0.41	(0.57)	0.45	(0.50)
Peru	0.24	(0.37)	0.24	(0.36)	0.24	(0.37)	0.25	(0.28)	0.35	(0.23)
Africa										
Kenya	n.a.		0.13	(0.88)	0.13	(0.71)	0.13	(0.62)	0.13	(0.64)
Morocco	n.a.		0.14	(0.84)	0.19	(0.92)	0.19	(0.77)	0.19	(0.79)
Malawi	n.a.		0.14	(0.91)	0.14	(0.88)	0.13	(0.84)	0.13	(0.45)
Nigeria	0.09	(0.31)	0.10	(0.20)	0.10	(0.14)	0.10	(0.18)	0.10	(0.25)
Tanzania	0.10	(0.68)	0.10	(0.88)	0.10	(0.88)	0.12	(0.86)	0.12	(0.44)
Zambia	0.09	(0.22)	0.09	(0.24)	0.09	(0.34)	0.09	(0.38)	0.09	(0.37)
Zimbabwe	0.15	(0.73)	0.15	(0.88)	0.15	(0.87)	0.18	(0.88)	0.18	(0.92)
South Asia										
India	0.22	(0.85)	0.22	(1.08)	0.24	(1.24)	0.23	(1.18)	0.25	(1.08
Pakistan	0.15	(0.80)	0.15	(0.88)	0.15	(0.41)	0.15	(0.39)	0.15	(0.42)
Sri Lanka	0.25	(0.71)	0.25	(0.82)	0.25	(0.53)	0.25	(0.34)	0.33	(0.38)
East Asia										
Hong Kong	0.11	(0.08)	0.11	(0.08)	0.15	(0.10)	0.20	(0.10)	0.20	(0.10)
Korea	0.20	(0.24)	0.20	(0.25)	0.20	(0.20)	0.20	(0.21)	0.20	(0.21)
Singapore	0.11	(0.14)	0.14	(0.08)	0.28	(0.14)	0.29	(0.12)	0.35	(0.17)
Europe										
Greece	0.53	(0.53)	0.50	(0.49)	0.55	(0.54)	0.55	(0.66)	0.55	(0.80)
Portugal	0.18	(0.21)	0.21	(0.24)	0.24	(0.40)	0.28	(0.37)	0.30	(0.35)
Austria					0.78	(0.77)	0.81	(0.78)	0.86	(0.76)
France					0.70	(0.65)	0.74	(0.68)	0.83	(0.78)
Germany					0.80	(0.74)	0.69	(0.78)	0.75	(0.77)
Spain					0.80	(0.65)	0.40	(0.67)	0.40	(0.67)
Sweden					0.45	(0.56)	0.62	(0.70)	0.67	(0.68)
United Kingdom					0.23	(0.33)	0.36	(0.51)	0.33	(0.38)
USA					0.32	(0.43)	0.35	(0.44)	0.37	(0.44)
Canada					0.23	(0.31)	0.25	(0.33)	0.28	(0.35)
Japan					0.14	(0.18)	0.16	(0.16)	0.17	(0.17)

* NWC are expressed as a proportion of labor earnings. Between brackets, the ratio formed by the year equivalent monetary value of NWC of labor and the hourly per capita income.

Sources: For industrial countries, Bureau of Labor Statistics: Hourly Compensation Cost for Production Workers (ratio of additional compensation to hourly earnings); NWC figures are not totally comparable because vacation days and vacation bonuses are not considered in the case of industrial countries.

For LDCs, see Appendix 1.

Table 2

Total Hourly Cost of Labor in Manufacturing
(US Dollars)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986e	1987e
Latin America															
Argentina	0.76	0.92	1.50	1.45	1.24	1.40	1.69	2.14	1.69	1.49	1.99	2.52	2.06	2.22	1.96
Brazil	0.31	0.46	0.66	1.00	1.11	1.25	1.45	1.90	1.64	1.60	1.20	1.16	1.22	1.60	1.49
Colombia	0.35	0.35	0.44	0.49	0.50	0.72	0.91	1.13	1.32	1.55	1.64	1.67	1.36	1.25	1.13
Chile	0.49	0.69	0.48	0.60	0.68	1.07	1.28	1.45	2.42	2.08	1.20	1.12	0.77	0.8	0.9
Mexico	0.68	0.88	1.81	2.06	1.60	1.72	1.99	2.54	3.10	2.15	1.48	1.69	1.74	1.82	1.81
Peru	0.41	0.48	0.97	0.88	0.78	0.85	0.84	0.80	0.98	0.98	0.71	0.80	0.87	0.84	n.a.
Average	0.49	0.62	1.00	1.08	1.02	1.15	1.31	1.57	1.65	1.66	1.40	1.48	1.36	1.41	
Africa															
Kenya	0.32	0.54	0.75	0.71	0.79	0.89	0.97	1.13	1.09	0.95	0.84	0.85	0.79	n.a.	n.a.
Morocco		0.65	1.48	1.32	1.55	1.67	2.08	2.09	1.80	1.68	1.51	1.50	1.29	1.27	n.a.
Malawi	0.11	0.28	0.31	0.30	0.28	0 28	0.42	0.51	0.52	0.62	0.45	0.34	0.32	n.a.	n.a.
Nigeria	0.16	0.29	0.50	0.48	0.48	0.50	0.75	1.08	1.12	1.09	1.06	1.13	1.10	1.09	n.a.
Tanzania	0.27	0.34	0.57	0.52	0.56	0.59	0.68	0.72	0.80	0.77	0.72	0.61	0.61	n.a.	n.a.
Zambia	0.37	0.59	0.99	1.27	1.04	1.27	1.40	1.48	1.48	1.37	1.12	0.94	0.85	n.a.	n.a
Zimbabwe	0.68	0.78	1.91	1.44	1.58	1.60	1.77	2.52	2.56	2.69	2.20	2.09	1.75	1.81	n.a.
Average	0.31	0.50	0.88	0.88	0.90	1.01	1.30	1.31	1.38	1.31	1.14	1.04	1.08		
South Asia															
India	0.27	0.38	0.44	0.48	0.51	0.58	0.64	0.72	0.67	0.68	0.64	0.62	0.66	n.a.	n.a.
Pakistan	0.18	0.22	0.34	0.27	0.34	0.42	0.44	0.41	0.43	0.46	0.45	0.52	0.51	n.a.	n.a.
Sri Lanka	0.38	0.34	0.38	0.34	0.32	0.38	0.38	0.32	0.31	0.34	0.36	0.36	0.38	n.a.	n.a.
Average	0.24	0.35	0.32	0.28	0.30	0.42	0.44	0.45	0.44	0.44	0.45	0.44	0.48		
East Asia															
Hong Kong	0.28	0.38	0.76	0.67	1.03	1.18	1.31	1.51	1.55	1.67	1.52	1.60	1.75	1.90	2.11
Korea	0.07	0.20	0.34	0.44	0.50	0.60	1.06	1.01	1.06	1.13	1.20	1.28	1.31	1.30	1.60
Singapore	0.34	0.52	0.79	0.79	0.84	0.98	1.12	1.28	1.55	1.67	1.90	2.11	2.12	1.92	2.04
Average	0.22	0.30	0.63	0.70	0.82	0.97	1.16	1.27	1.38	1.49	1.54	1.66	1.73	1.73	1.95
Europe 1															
Greece	0.51	0.80	1.69	1.92	2.20	2.64	3.37	3.73	3.56	4.12	3.76	3.74	3.66	4.06	n.a.
Portugal	0.29	0.46	1.58	1.66	1.58	1.63	1.68	2.06	2.04	1.98	1.81	1.44	1.50	2.06	n.a.
Average	0.40	0.63	1.64	1.79	1.94	2.23	2.53	2.90	2.86	3.00	2.68	2.54	2.58	3.07	
Europe 2															
Austria			4.84	4.32	5.47	6.67	7.67	8.56	7.49	7.47	7.49	2.04	7.26	10.21	12.62
France			4.82	4.78	5.21	6.43	7.69	8.04	8.02	7.86	7.74	7.29	7.82	10.27	12.26
Germany			6.26	6.73	7.66	9.65	11.29	12.36	10.53	10.28	10.28	9.43	9.56	13.26	16.69
Spain			2.89	2.92	3.26	3.90	5.40	5.96	5.62	5.35	4.64	4.58	4.79	6.47	7.82
Sweden			7.16	8.25	8.68	9.65	11.33	12.51	11.80	10.07	8.69	9.17	9.66	12.43	15.14
United Kingdom			3.32	3.12	3.40	4.24	5.61	7.43	7.20	6.82	6.39	6.96	6.19	7.80	9.07
Average			4.72	5.02	5.68	6.77	8.17	9.29	8.44	7.97	9.56	7.24	7.80	10.06	12.34
USA			6.26	6.94	7.69	8.27	9.02	9.64	10.64	11.64	12.10	12.61	12.96	13.21	13.46
Canada			5.95	6.92	7.18	7.25	7.89	8.47	9.32	10.20	10.97	11.07	10.82	11.04	11.98
Average			6.10	6.93	7.39	7.76	8.36	9.16	10.08	10.92	11.54	11.79	11.89	12.13	12.72
Japan			3.05	3.30	4.02	5.54	5.49	5.61	6.78	5.70	6.73	6.34	6.47	9.47	11.34

Source: See Appendix 1.

Table 1

Non-wage Costs of Labor
(percentages*)

	1965		1970		1975		1980		1985	
Latin America	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Argentina	0.33	(0.48)	0.33	(0.52)	0.35	(0.50)	0.46	(0.61)	0.46	(0.64)
Brazil	0.24	(0.60)	0.34	(0.53)	0.35	(0.39)	0.36	(0.38)	0.38	(0.42)
Colombia	0.31	(0.10)	0.43	(0.24)	0.52	(0.49)	0.62	(0.60)	0.62	(0.69)
Chile	0.36	(0.39)	0.43	(0.49)	0.51	(0.42)	0.26	(0.25)	0.25	(0.24)
Mexico	0.37	(0.75)	0.37	(0.67)	0.39	(0.71)	0.41	(0.57)	0.45	(0.50)
Peru	0.24	(0.37)	0.24	(0.36)	0.24	(0.37)	0.25	(0.28)	0.35	(0.23)
Africa										
Kenya	n.a.		0.13	(0.88)	0.13	(0.71)	0.13	(0.63)	0.13	(0.64)
Morocco	n.a.		0.14	(0.84)	0.19	(0.92)	0.19	(0.77)	0.19	(0.79)
Malawi	n.a.		0.14	(0.91)	0.14	(0.88)	0.13	(0.84)	0.13	(0.45)
Nigeria	0.09	(0.31)	0.10	(0.20)	0.10	(0.14)	0.10	(0.18)	0.10	(0.26)
Tanzania	0.10	(0.83)	0.10	(0.88)	0.10	(0.88)	0.12	(0.86)	0.12	(0.44)
Zambia	0.09	(0.22)	0.09	(0.24)	0.08	(0.24)	0.08	(0.28)	0.08	(0.37)
Zimbabwe	0.15	(0.73)	0.15	(0.89)	0.15	(0.67)	0.18	(0.98)	0.18	(0.92)
South Asia										
India	0.22	(0.95)	0.22	(1.08)	0.24	(1.24)	0.23	(1.18)	0.25	(1.08
Pakistan	0.15	(0.80)	0.15	(0.88)	0.15	(0.41)	0.15	(0.38)	0.15	(0.42)
Sri Lanka	0.25	(0.71)	0.25	(0.62)	0.25	(0.53)	0.25	(0.24)	0.23	(0.28)
East Asia										
Hong Kong	0.11	(0.08)	0.11	(0.09)	0.15	(0.10)	0.20	(0.10)	0.20	(0.10)
Korea	0.20	(0.24)	0.20	(0.25)	0.20	(0.20)	0.20	(0.21)	0.20	(0.21)
Singapore	0.11	(0.14)	0.14	(0.09)	0.28	(0.14)	0.29	(0.12)	0.35	(0.17)
Europe										
Greece	0.53	(0.53)	0.50	(0.49)	0.55	(0.54)	0.55	(0.66)	0.55	(0.80)
Portugal	0.18	(0.21)	0.21	(0.24)	0.24	(0.40)	0.28	(0.37)	0.30	(0.35)
Austria					0.78	(0.77)	0.81	(0.73)	0.88	(0.76)
France					0.70	(0.65)	0.74	(0.68)	0.83	(0.73)
Germany					0.80	(0.74)	0.89	(0.78)	0.75	(0.77)
Spain					0.50	(0.65)	0.40	(0.67)	0.40	(0.67)
Sweden					0.45	(0.58)	0.62	(0.70)	0.67	(0.68)
United Kingdom					0.23	(0.23)	0.36	(0.51)	0.33	(0.38)
USA					0.32	(0.43)	0.35	(0.44)	0.37	(0.44)
Canada					0.23	(0.31)	0.25	(0.33)	0.28	(0.35)
Japan					0.14	(0.18)	0.16	(0.16)	0.17	(0.17)

* NWC are expressed as a proportion of labor earnings. Between brackets, the ratio formed by the year equivalent monetary value of NWC of labor and the hourly per capita income.

Sources: For industrial countries, Bureau of Labor Statistics: Hourly Compensation Cost for Production Workers (ratio of additional compensation to hourly earnings); NWC figures are not totally comparable because vacation days and vacation bonuses are not considered in the case of industrial countries.

For LDCs, see Appendix 1.

Table 2

Total Hourly Cost of Labor in Manufacturing
(US Dollars)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986e	1987e
Latin America															
Argentina	0.76	0.92	1.80	1.45	1.24	1.40	1.69	2.14	1.69	1.46	1.99	2.82	2.08	2.82	1.36
Brazil	0.81	0.46	0.88	1.00	1.11	1.38	1.45	1.36	1.84	1.88	1.28	1.18	1.22	1.00	1.49
Colombia	0.35	0.35	0.44	0.46	0.59	0.72	0.91	1.13	1.32	1.55	1.64	1.67	1.38	1.25	1.13
Chile	0.49	0.69	0.48	0.60	0.68	1.07	1.28	1.45	2.42	2.08	1.20	1.12	0.77	0.8	0.9
Mexico	0.68	0.85	1.81	2.08	1.80	1.72	1.99	2.84	3.10	2.13	1.48	1.69	1.74	1.62	1.81
Peru	0.41	0.48	0.97	0.89	0.78	0.88	0.84	0.80	0.98	0.95	0.71	0.90	0.87	0.84	n.a.
Average	0.49	0.62	1.00	1.08	1.02	1.18	1.31	1.57	1.85	1.88	1.40	1.48	1.38	1.41	
Africa															
Kenya	0.32	0.54	0.75	0.71	0.79	0.89	0.97	1.13	1.08	0.95	0.84	0.85	0.79	n.a.	n.a.
Morocco		0.85	1.48	1.52	1.85	1.67	2.08	2.08	1.80	1.88	1.81	1.80	1.89	1.27	n.a.
Malawi	0.11	0.25	0.31	0.30	0.28	0 38	0.42	0.51	0.52	0.68	0.45	0.84	0.32	n.a.	n.a.
Nigeria	0.16	0.20	0.30	0.45	0.46	0.80	0.75	1.08	1.12	1.08	1.08	1.12	1.10	1.00	n.a.
Tanzania	0.27	0.34	0.57	0.62	0.58	0.80	0.88	0.72	0.89	0.77	0.72	0.81	0.81	n.a.	n.a.
Zambia	0.27	0.39	0.99	1.27	1.04	1.27	1.40	1.48	1.46	1.87	1.12	0.94	0.88	n.a.	n.a
Zimbabwe	0.68	0.78	1.91	1.44	1.88	1.89	1.77	2.22	2.84	2.89	2.29	2.09	1.75	1.81	n.a.
Average	0.31	0.80	0.88	0.88	0.90	1.01	1.20	1.31	1.38	1.31	1.14	1.04	1.08		
South Asia															
India	0.27	0.28	0.44	0.48	0.51	0.88	0.84	0.72	0.67	0.88	0.84	0.82	0.88	n.a.	n.a.
Pakistan	0.16	0.22	0.24	0.27	0.34	0.42	0.44	0.41	0.48	0.46	0.45	0.82	0.51	n.a.	n.a.
Sri Lanka	0.28	0.24	0.28	0.24	0.22	0.28	0.28	0.22	0.21	0.24	0.25	0.25	0.28	n.a.	n.a.
Average	0.24	0.25	0.32	0.33	0.29	0.42	0.44	0.45	0.44	0.44	0.45	0.44	0.48		
East Asia															
Hong Kong	0.28	0.28	0.76	0.67	1.08	1.18	1.81	1.81	1.88	1.67	1.82	1.80	1.75	1.89	2.11
Korea	0.07	0.20	0.24	0.44	0.89	0.80	1.08	1.01	1.08	1.18	1.20	1.28	1.81	1.96	1.89
Singapore	0.24	0.28	0.79	0.79	0.84	0.98	1.12	1.28	1.88	1.87	1.89	2.11	2.18	1.92	2.04
Average	0.22	0.20	0.83	0.70	0.82	0.97	1.16	1.27	1.28	1.49	1.84	1.88	1.78	1.78	1.95
Europe 1															
Greece	0.51	0.80	1.89	1.92	2.29	2.84	3.37	3.73	3.88	4.12	3.76	3.74	3.86	4.09	n.a.
Portugal	0.29	0.48	1.88	1.86	1.88	1.83	1.88	2.08	2.04	1.88	1.81	1.44	1.80	2.08	n.a.
Average	0.40	0.63	1.64	1.79	1.94	2.28	2.88	2.90	2.86	3.00	2.88	2.54	2.88	3.07	
Europe 2															
Austria			4.84	4.82	5.47	6.67	7.67	8.86	7.49	7.47	7.49	2.04	7.26	10.21	12.82
France			4.82	4.78	5.21	6.48	7.66	8.94	8.02	7.86	7.74	7.29	7.82	10.27	12.36
Germany			6.86	6.78	7.86	9.66	11.29	12.88	10.88	10.28	10.88	9.49	9.86	13.36	16.68
Spain			2.89	2.92	3.26	3.90	5.40	5.98	5.82	5.36	4.84	4.88	4.79	6.47	7.82
Sweden			7.18	8.25	8.88	9.65	11.88	12.51	11.80	10.07	8.89	9.17	9.66	12.48	15.14
United Kingdom			3.92	3.12	3.40	4.24	5.61	7.48	7.20	6.82	6.29	6.96	6.19	7.80	9.07
Average			4.72	5.02	5.68	6.77	8.17	9.29	8.44	7.97	9.86	7.24	7.80	10.08	12.84
USA			6.86	6.94	7.89	8.27	9.02	9.84	10.84	11.84	12.10	12.81	12.96	13.21	13.46
Canada			5.86	6.92	7.18	7.25	7.89	8.47	9.22	10.20	10.97	11.07	10.82	11.04	11.28
Average			6.10	6.98	7.89	7.76	8.36	9.18	10.08	10.92	11.54	11.79	11.89	12.13	12.72
Japan			3.05	3.30	4.02	5.54	5.49	5.81	6.78	5.70	6.78	6.34	6.47	9.47	11.34

Source: See Appendix 1.

Table 3

Real Hourly Cost of Labor*
(Index 1980 = 100)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Argentina	98.8	106.1	107.9	78.9	80.0	84.0	90.2	100.0	72.5	62.7	82.3	102.3	83.8
Brazil	61.4	81.3	95.1	106.7	110.5	122.9	117.4	100.0	108.1	120.2	80.4	72.3	76.4
Chile	94.3	116.0	45.3	61.2	84.2	94.3	100.8	100.0	153.2	129.2	79.7	87.6	46.5
Colombia	86.5	76.8	59.9	63.9	72.0	82.8	92.1	100.0	107.7	123.3	129.2	128.3	106.8
Greece	88.4	52.4	69.7	75.6	85.0	97.8	103.1	100.0	89.9	99.2	89.4	86.9	85.4
Hong Kong	47.7	61.0	77.4	84.6	94.4	100.4	99.0	100.0	94.1	99.3	99.3	91.8	100.9
India	105.0	94.7	94.8	97.3	98.7	103.4	101.5	100.0	85.9	79.0	79.7	75.3	79.6
Kenya	79.3	116.0	101.3	92.0	96.9	101.2	98.2	100.0	83.6	75.4	66.1	65.4	60.6
Korea	20.4	47.6	51.8	64.0	80.9	101.7	119.8	100.0	96.2	100.5	105.4	109.8	112.9
Malawi	65.6	110.1	92.4	85.6	88.8	95.6	94.9	100.0	98.1	111.1	79.1	58.5	NA
Mexico	69.2	80.0	109.5	119.0	87.4	87.2	89.5	100.0	112.0	75.3	51.8	57.7	59.8
Morocco	NA	100.2	107.0	106.8	104.3	116.6	112.4	100.0	79.9	73.3	65.0	54.9	54.6
Nigeria	40.4	46.2	56.2	58.4	59.0	59.1	79.3	100.0	96.1	90.2	87.2	90.8	89.1
Pakistan	118.6	130.7	91.9	96.5	114.3	132.9	122.2	100.0	97.1	102.0	97.6	109.4	108.6
Peru	140.8	146.1	186.3	163.0	125.4	95.3	77.0	100.0	108.4	106.7	79.0	85.1	89.9
Portugal	87.6	54.4	117.9	118.4	106.2	101.6	98.1	100.0	90.7	92.0	89.3	80.6	83.4
Singapore	74.1	68.6	94.3	90.6	90.5	92.8	99.7	100.0	109.0	117.1	130.5	142.2	144.4
Sri Lanka	288.9	209.5	155.3	127.7	137.8	156.9	119.7	100.0	82.4	98.9	95.7	109.3	108.0
Tanzania	NA	115.1	122.2	106.8	108.0	106.4	100.6	100.0	102.0	96.3	88.9	78.6	74.0
Zambia	89.1	97.1	102.6	126.7	97.5	110.3	107.8	100.0	90.6	88.1	67.4	55.1	49.8
Zimbabwe	79.4	79.8	97.5	96.5	98.1	92.7	90.8	100.0	105.5	108.9	91.4	81.4	68.5
USA	NA	NA	99.4	103.6	106.8	107.9	104.6	100.0	100.9	106.3	109.1	110.2	114.7

* Original data were in nominal dollar terms. The deflator used was the WPI of the USA.

Source: Table 2 and World Bank Files (Andre)

Table 4

Employment Trends in Manufacturing

	1965	1970	1975	1980	1981	1982	1983	1984	1985
Latin America									
Argentina	n.a.	100	119.5	88.5	77.6	73.4	75.8	77.8	74.9
Brazil	88.9	100	166.0	215.2	226.6	238.6	251.3	264.6	278.6
Colombia	83.4	100	132.9	150.0	145.7	142.0	137.3	134.4	132.1
Chile	100.3	100	96.8	84.8	78.9	62.4	62.1	67.5	72.7
Mexico	n.a.	100	116.0	140.0	147.3	144.0	130.4	128.0	128.4
Peru	91.7	100	n.a.	139.8	122.4	149.4	153.8	158.4	163.1
Africa									
Kenya	73.2	100	154.6	206.5	220.1	227.8	237.1	246.8	256.8
Morocco	n.a.	100e	130.7	160.9	168.3	176.0	184.0	192.5	201.3
Malawi	59.0	100	149.9	211.1	202.6	196.2	196.9	n.a.	n.a.
Nigeria	61.3	100	187.5	335.5	358.4	267.7	252.8	n.a.	n.a.
Tanzania	59.3	100	n.a.	209.0	215.9	208.4	214.5	219.2	224.1
Zambia	85.0	100	137.0	144.8	146.7	148.7	150.7	152.7	154.8
Zimbabwe	72.4	100	140.5	148.6	159.9	162.7	155.8	149.6	153.1
Asia									
India	91.0	100	119.7	147.3	146.7	150.8	146.4	149.5	152.7
Hong Kong	61.4	100	126.0	169.3	169.8	157.8	159.8	169.1	159.3
Korea	55.9	100	166.8	243.6	243.1	249.3	268.3	278.4	291.8
Pakistan	86.0	100	107.6	106.0	107.9	113.4	113.7	114.0	114.4
Singapore	89.0	100	156.2	232.1	229.4	224.1	221.8	224.1	206.9
Sri Lanka	58.5	100	129.8	165.5	164.2	342.6	n.a.	n.a.	n.a.
Europe									
Greece	92.8	100	124.6	138.7	139.4	141.6	143.8	146.1	148.4
Portugal	84.5	100	136.3	153.6	154.5	152.3	150.2	144.7	148.6
Austria	98.8	100	102.6	106.5	103.5	99.3	99.5	99.0	99.1
France	98.6	100	104.1	96.9	95.7	94.3	92.1	89.4	86.7
Germany	98.1	100	88.8	88.1	86.0	82.9	80.2	79.5	80.6
Spain	90.4	100	118.3	128.7	115.0	107.1	104.3	99.6	95.5
Sweden	99.6	100	101.9	94.0	90.9	86.9	84.0	84.4	84.6
United Kingdom	n.a.	100	93.0	81.3	72.4	67.2	63.8	63.7	63.6
USA	94.3	100	98.9	105.5	103.4	97.4	96.5	97.7	95.7
Canada	96.8	100	108.4	113.1	113.2	104.0	102.1	105.1	107.2

Source: Manufacturing Data Base, The World Bank (BESD).

Table 3

Real Hourly Cost of Labor*
(Index 1980 = 100)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Argentina	98.8	105.1	107.9	78.9	80.0	84.0	90.2	100.0	72.5	62.7	82.8	102.8	88.8
Brazil	61.4	81.3	96.1	105.7	110.5	122.9	117.4	100.0	108.1	120.2	80.4	72.8	76.4
Chile	94.8	116.0	45.8	61.2	84.2	94.8	100.8	100.0	158.2	129.2	79.7	67.6	46.5
Colombia	96.5	76.8	59.9	63.9	72.0	82.8	92.1	100.0	107.7	128.8	129.2	128.8	108.8
Greece	88.4	82.4	89.7	75.6	85.0	97.8	103.1	100.0	89.9	99.2	89.4	86.9	85.4
Hong Kong	47.7	61.0	77.4	84.6	94.4	100.4	99.0	100.0	94.1	99.8	89.8	91.8	100.9
India	105.0	94.7	94.8	97.3	98.7	103.4	101.5	100.0	85.9	79.0	79.7	75.8	79.6
Kenya	79.3	116.0	101.3	92.0	96.9	101.2	98.2	100.0	83.6	75.4	68.1	65.4	60.8
Korea	20.4	47.6	51.8	64.0	80.9	101.7	119.8	100.0	98.2	109.5	105.4	109.8	112.9
Malawi	85.6	110.1	92.4	85.6	88.8	96.6	94.9	100.0	98.1	111.1	79.1	58.5	NA
Mexico	69.2	80.0	109.5	119.0	87.4	87.2	89.5	100.0	112.0	75.8	51.8	57.7	59.8
Morocco	NA	100.2	107.0	108.8	104.8	116.6	112.4	100.0	79.9	73.8	65.0	54.9	54.6
Nigeria	40.4	46.2	56.2	58.4	59.0	59.1	79.8	100.0	95.1	90.2	87.2	90.8	89.1
Pakistan	113.6	130.7	91.9	96.5	114.8	132.9	122.2	100.0	97.1	102.0	97.6	109.4	108.6
Peru	140.8	146.1	186.8	169.0	125.4	85.8	77.0	100.0	108.4	108.7	79.0	65.1	39.9
Portugal	87.6	84.4	117.9	118.4	126.2	101.6	98.1	100.0	90.7	92.0	89.8	90.6	88.4
Singapore	74.1	68.6	94.8	90.6	90.5	92.8	99.7	100.0	109.0	117.1	130.5	142.2	144.4
Sri Lanka	288.9	209.5	155.8	127.7	137.8	158.9	119.7	100.0	92.4	98.9	95.7	109.8	106.0
Tanzania	NA	115.1	122.2	106.8	108.0	108.4	100.6	100.0	102.0	96.8	88.9	78.6	74.0
Zambia	89.1	97.1	102.6	125.7	97.5	110.8	107.8	100.0	90.6	88.1	67.4	55.1	49.8
Zimbabwe	79.4	79.8	97.5	96.5	98.1	92.7	90.8	100.0	105.5	108.9	91.4	81.4	88.5
USA	NA	NA	99.4	103.6	106.8	107.9	104.6	100.0	100.9	106.8	109.1	110.2	114.7

* Original data were in nominal dollar terms. The deflator used was the WPI of the USA.

Source: Table 2 and World Bank Files (Andre)

Table 4

Employment Trends in Manufacturing

	1965	1970	1975	1980	1981	1982	1983	1984	1985
Latin America									
Argentina	n.a.	100	119.5	98.5	77.6	73.4	75.8	77.8	74.9
Brazil	88.9	100	166.0	215.2	220.6	238.6	251.3	264.6	278.6
Colombia	88.4	100	132.9	150.0	145.7	142.0	137.3	134.4	132.1
Chile	100.3	100	96.8	84.8	78.9	62.4	62.1	67.5	72.7
Mexico	n.a.	100	116.0	140.0	147.3	144.0	130.4	128.0	128.4
Peru	91.7	100	n.a.	139.8	122.4	149.4	153.8	158.4	163.1
Africa									
Kenya	73.2	100	154.6	208.5	220.1	227.8	237.1	246.8	256.8
Morocco	n.a.	100e	130.7	160.9	168.3	176.0	184.0	192.5	201.3
Malawi	59.0	100	149.9	211.1	202.6	198.2	193.9	n.a.	n.a.
Nigeria	61.3	100	187.5	335.5	358.4	267.7	252.8	n.a.	n.a.
Tanzania	58.3	100	n.a.	209.0	215.9	208.4	214.5	219.2	224.1
Zambia	55.0	100	137.0	144.8	146.7	148.7	150.7	152.7	154.8
Zimbabwe	72.4	100	140.5	148.6	159.9	162.7	155.8	149.6	153.1
Asia									
India	91.0	100	119.7	147.3	146.7	150.8	146.4	149.5	152.7
Hong Kong	61.4	100	126.0	138.3	168.8	157.8	159.8	168.1	158.3
Korea	55.9	100	168.8	243.6	243.1	249.3	263.3	278.4	291.8
Pakistan	86.0	100	107.6	108.0	107.9	113.4	113.7	114.0	114.4
Singapore	39.0	100	156.2	232.1	229.4	224.1	221.8	224.1	206.9
Sri Lanka	58.5	100	129.6	165.5	164.2	342.6	n.a.	n.a.	n.a.
Europe									
Greece	92.8	100	124.6	138.7	139.4	141.6	143.8	146.1	148.4
Portugal	84.5	100	136.3	153.6	154.5	152.3	150.2	144.7	148.6
Austria	98.8	100	102.6	106.5	103.5	99.3	99.5	99.0	99.1
France	98.6	100	104.1	98.9	96.7	94.3	92.1	89.4	86.7
Germany	96.1	100	88.8	88.1	86.0	82.9	80.2	79.5	80.6
Spain	90.4	100	113.8	123.7	115.0	107.1	104.3	99.6	95.5
Sweden	99.6	100	101.9	94.0	90.9	86.9	84.0	84.4	84.6
United Kingdom	n.a.	100	93.0	81.3	72.4	67.2	63.8	63.7	63.6
USA	94.3	100	93.9	105.5	103.4	97.4	96.5	97.7	95.7
Canada	95.8	100	106.4	113.1	113.2	104.0	102.1	105.1	107.2

Source: Manufacturing Data Base, The World Bank (DESD).

Table 6

Agricultural Labor Force (AL) and Share of Manufactured Exports (SM)
(percentages)

	1970		1980		1985
	AL	SM	AL	SM	SM
Latin America					
Argentina	16.0	13.9	13.0	23.2	21.3
Brazil	44.9	16.0	31.2	39.2	49.7
Colombia	39.3	8.0	34.2	20.4	20.8
Chile	23.2	4.4	16.5	9.5	8.5
Mexico	44.1	27.6	36.5	14.2	24.0
Peru	47.1	1.5	40.0	17.1	21.4
Africa					
Kenya	84.8	11.2	81.0	15.1	12.8
Morocco	57.6	10.0	45.6	13.2	38.9
Malawi	90.5	11.4	83.3	13.4	11.0
Nigeria	71.0	1.4	68.1	0.5	0.6
Tanzania	n.a.	12.9	n.a.	15.8	15.2
Zambia	76.6	0.8	73.1	0.9	2.5
Zimbabwe	77.3	15.9	72.8	28.4	34.5
Asia					
India	71.7	52.4	69.7	62.0	70.8
Hong Kong	4.4	93.4	2.1	92.0	92.7
Korea	49.1	82.1	36.4	90.6	91.4
Pakistan	58.9	30.9	54.6	53.7	58.5
Singapore	3.4	30.9	1.6	53.7	58.5
Sri Lanka	55.3	1.7	53.4	18.8	34.6
Europe					
Greece	42.2	35.3	30.9	46.8	49.4
Portugal	31.8	64.1	25.8	71.9	77.3

Note: There were no data on agricultural labor force

AL: proportion of the total labor force.

SM: proportion of total exports.for 1985.

Source: World Tables, 1987, The World Bank.

Table 7

Ratio: Total Labor Costs to Per Capita Income

	1965	1970	1975	1980	1981	1982	1983	1984	1985
Latin America									
Argentina	1.96	2.07	1.90	1.92	1.78	1.58	1.88	2.26	2.01
Brazil	2.87	2.10	1.52	1.46	1.59	1.88	1.66	1.52	1.51
Colombia	2.22	2.11	1.64	1.62	2.00	2.22	2.42	2.56	2.40
Chile	1.46	1.68	1.25	1.22	1.75	2.05	1.60	1.46	1.22
Mexico	2.78	2.47	2.57	1.96	1.92	1.74	1.61	1.59	1.60
Peru	1.96	1.90	1.98	1.40	1.36	1.40	1.39	1.18	0.90
Africa									
Kenya	6.41	7.85	6.38	5.53	5.57	5.70	5.74	5.93	5.69
Morocco	n.a.	6.81	5.74	4.81	5.20	4.76	4.92	4.88	4.96
Malawi	4.26	7.31	5.44	5.14	5.43	7.13	5.11	4.09	n.a.
Nigeria	3.49	2.29	1.61	2.06	2.43	2.47	2.44	2.71	2.84
Tanzania	n.a.	7.27	7.02	5.83	5.36	5.03	4.97	4.73	4.21
Zambia	2.67	2.92	4.16	4.62	4.42	4.44	4.37	4.60	4.52
Zimbabwe	5.63	5.32	5.13	6.16	6.10	6.22	6.08	6.43	6.07
Asia									
India	5.37	5.82	6.43	6.24	5.84	5.40	5.13	5.29	5.15
Hong Kong	0.86	0.86	0.74	0.58	0.57	0.59	0.59	0.58	0.58
Korea	1.45	1.49	1.18	1.29	1.24	1.26	1.27	1.26	1.29
Pakistan	6.07	5.20	3.18	2.97	2.78	2.78	2.97	3.23	3.24
Singapore	1.39	0.76	0.75	0.55	0.56	0.56	0.58	0.59	0.64
Sri Lanka	3.56	3.10	2.66	1.68	1.48	1.59	1.55	1.34	1.33
Europe									
Greece	1.53	1.47	1.52	1.86	2.00	2.18	2.20	2.28	2.26
Portugal	1.36	1.40	2.10	1.72	1.75	1.66	1.62	1.57	1.54

Source: Table w and World Bank Files

Table 8
Ratio: Unit Labor Cost to Per Capita Production in Manufacturing (Labor Shares)

	1970	1975	1980	1985
Argentina	0.80	0.80	0.40	0.28
Brazil	0.21	0.17	0.20	0.24
Colombia	0.18	0.16	0.17	0.20
Chile*	0.19	0.12	0.18	0.17
Mexico	0.36	0.37	0.30	0.27
Peru*	0.22	0.15	0.19	0.15
x	0.28	0.25	0.24	0.22
Sd	(0.13)	(0.15)	(0.10)	(0.05)
Kenya*	0.53	0.44[1]	0.43	0.47
Morocco	0.47*	0.54	0.48	0.57
Malawi	0.37	0.38	0.34	0.35
Nigeria	0.10	0.11	0.11	0.10
Tanzania	0.48	0.53[1]	0.42	0.48[2]
Zambia	0.26	0.24	0.23	0.20
Zimbabwe	0.47	0.48	0.50	0.37
x	0.36	0.39	0.36	0.36
Sd	(0.15)	(0.16)	(0.14)	(0.16)
India	0.63	0.70	0.80	0.66
Pakistan	0.19	0.24	0.16	0.14
Sri Lanka	0.40	0.33	0.34	0.29
x	0.41	0.42	0.43	0.33
Sd	(0.22)	(0.24)	(0.33)	(0.21)
Hong Kong	0.44	0.42	0.40	0.37
Korea	0.20	0.17	0.22	0.22
Singapore	0.24	0.22	0.19	0.23
x	0.29	0.22	0.19	0.23
Sd	(0.13)	(0.13)	(0.11)	(0.08)
Greece	0.34	0.41	0.48	0.58
Portugal	0.37	0.67	0.52	0.46
x	0.36	0.54	0.50	0.52
Sd	(0.02)	(0.18)	(0.03)	(0.08)
Austria	64.0*	0.76	0.81	0.75
Germany	62.7*	0.67	0.70	0.65
Spain	60.7*	0.63	0.57	0.49
Sweden	78.7*	0.86	0.72	0.63
United Kingdom	68.1*	0.62	0.61	0.51
USA	55.2*	0.51	0.51	0.47
Canada	60.0*	0.56	0.55	0.50
Japan	34.0*	0.43	0.36	0.28
x	0.59	0.61	0.60	0.55
Sd	(0.11)	(0.10)	(0.14)	(0.12)

Sources: Table 2 and Manufacturing Data Base (BESD), The World Bank. For countries or years indicated with *, the source is World Tables, 1987.
x: Arithmetic average; Sd = Standard deviation.
1 Data on manufacturing production correspond to 1978.
2 Data on manufacturing production correspond to 1984.

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APPENDIX 1

Sources of Empirical Information

For each of the countries in the study, we used the sources of information described in section A. We also describe specific data sources used for individual countries (Section B).

A. General Sources:

U. S. Department of Labor - Bureau of Labor Statistics: International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, various editions.

International Labor Office (ILO): Yearbook of Labor Statistics, various editions.

International Labor Office (ILO): The Cost of Social Security (10th and 11th International Inquiry).

International Labor Office (ILO): Unpublished reports on labor cost items for various countries.

International Labor Office (ILO): Legislative Series (various countries).

Price Waterhouse Doing Business in ...., various editions (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Hong Kong, India, Korea, Singapore, Greece, Portugal, Kenya, Morocco, Nigeria, Zimbabwe).

The World Bank: World Tables, 1987. The Fourth Edition.

World Bank's Data Files: Manufacturing Data Base - BESD (UNIDO); Andrex; IFS.

B. Country Sources:

Argentina

Sanchez C. and Giordano, O. : "Exchange Rate Policies and Structure of the Labor Market in Latin America, Report on Argentina," mimeo, The World Bank, 1988.

FIEL: Evolucion Real de Remuneraciones Medias, Brutas, e Industria Manufacturera.

Brazil

Anuario Estatistico Do Brazil (various editions).

Colombia

DANE: Colombia Estadistica, 1986.

Reyes, A.: Tendencias del Empleo y la Distribución del Ingreso, 1986.

The World Bank: Colombia. Labor Costs and Labor Markets in Manufacturing, 1985.

Chile

Paredes, R.: "Exchange Rate Policies and Structure of the Labor Market in Latin America. Report on Chile," The World bank, mimeo, 1988.

Yanez, J.: "Un Indice de Remuneraciones para el Gran Santiago," 1987.

Mexico

INEGI: Encuesta Manufacturera Mensual.

Riveros, 1986b.

Peru

Data Based used in Paldam and Riveros (1987)

Pollack, M. (1988)

Greece

Office Nationel di Statistique de Grece: Enquête sur le coût de la main d'ouvre, (various editions).

Portugal

Instituto Nacional de Estatistica: Estatisticas Dos Salarios (various editions).

Hongkong

Institut de l'Economie Allemande: Coûts salariaux et conditions de travail dans l'Asie du Sud-Est (1986).

ILO: Indirect Renumeration in Asean countries, mimeo, 1982.

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Korea

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Singapore

Institut di l'Economie Allemande (op.cit.).

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India

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Pakistan

Irfan, M.: Wage Policies in Pakistan, 1970-84, mimeo, 1985.

Morocco

Ministerè de l'Industrie et du Commerce: Statistique des Industries de Transformation (various editions).

World Bank Estimates (Region).

Malawi

ILO: National Wage Policy in Malawi, 1985.

National Statistical Office: Employment and Earnings. Annual Report (various editions)

Nigeria

Collier and Riveros, 1987.

Federal Office of Statistics: Earnings and House Worked Per Industry (unpublished).

Kenya

National Bureau of Statistics: Employment and Earnings in the Modern Sector (various editions)

National Bureau of Statistics: Statistical Abstract (various editions).

Tanzania

Bureau of Statistics: Survey of Employment and Earnings (various editions).

Zambia

Central Statistical Office: Monthly Digest of Statistics (various editions).

Zimbabwe

Mkandawire, Th. "The Impact of the Recent World Recession on the Zimbabwean Economy," Working Paper, World Employment Program, ILO (SATEP), 1985.

APPENDIX 2

Table 2a

Atlas Exchange Rate
(units of domestic currency per dollar)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Argentina	0.2[a]	0.4[a]	0.4[c]	0.4[b]	0.5[c]	0.1[d]	0.3[d]	0.5[d]	1.0[d]	0.3[e]	0.1[f]	0.7[f]	0.7[f]
Brazil	0.2[e]	0.5[e]	0.8[e]	0.1[f]	0.1[f]	0.2[f]	0.3[f]	0.5[f]	0.1	0.2	0.6	1.8	6.2
Chile	0.8[e]	0.1[e]	4.9	13.1	21.5	31.7	37.2	39.0	39.0	50.9	78.8	96.7	161.1
Colombia	10.5	18.4	30.9	34.7	36.8	39.1	42.6	47.3	54.5	64.1	78.9	100.8	142.3
Greece	30.0	30.0	32.1	36.5	36.8	36.7	37.0	42.6	55.4	66.8	86.1	112.7	138.1
Hong Kong	5.7	6.1	4.9	4.9	4.7	4.7	5.0	5.0	5.6	6.1	7.8	7.8	7.8
India	4.8	7.5	8.7	8.9	8.6	8.2	8.1	7.9	8.9	9.8	10.3	11.9	12.2
Kenya	7.1	7.1	7.8	8.4	8.8	7.7	7.5	7.4	9.6	10.9	13.3	14.4	16.4
Korea	266.3	310.6	484.0	484.0	484.0	484.0	484.0	607.4	681.0	731.1	775.8	806.0	870.0
Malawi	0.7	0.8	0.9	0.9	0.9	0.8	0.8	0.8	0.9	1.1	1.2	1.4	1.7
Mexico	12.5	12.5	12.5	15.4	22.6	22.8	22.8	23.0	24.5	56.4	120.1	167.8	256.9
Morocco	5.1	5.1	4.1	4.4	4.5	4.2	3.9	3.9	5.2	6.0	7.1	8.8	10.1
Nigeria	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.7	0.7	0.8	0.9
Pakistan	4.8	4.8	9.9	9.9	9.9	9.9	9.9	9.9	9.9	10.6	12.7	13.5	15.2
Peru	0.8[f]	0.8[f]	0.4[e]	0.5[e]	0.8[e]	0.2	0.2	0.3	0.4	0.7	1.6	3.5	11.0
Portugal	28.8	28.8	25.6	30.2	38.3	43.9	48.6	50.1	61.5	79.5	110.8	146.4	170.4
Singapore	3.1	3.1	2.4	2.5	2.4	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.2
Sri Lanka	4.8	6.8	9.0	10.9	13.4	15.6	15.6	16.5	19.2	20.9	23.5	25.4	27.2
Tanzania	7.1	7.1	7.4	8.4	8.8	7.7	8.2	8.2	8.8	9.8	11.1	15.8	17.5
Zambia	0.7	0.7	0.6	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1.8	1.8	2.7
Zimbabwe	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.8	0.7	0.8	1.0	1.2	1.8

Notes:

(a): multiplied by 10^{-6}
(b): multiplied by 10^{-5}
(c): multiplied by 10^{-4}
(d): multiplied by 10^{-3}
(e): multiplied by 10^{-2}
(e): multiplied by 10^{-1}

Table 2b

Labor Cost Levels
(Domestic Currency; nominal terms)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Argentina	0.2[a]	0.3[a]	0.5[b]	0.2[c]	0.5[c]	0.1[d]	0.4[d]	0.9[d]	0.2[e]	0.4[e]	0.2[f]	0.2	1.3
Brazil	0.6[d]	0.2[e]	0.6[e]	0.1[f]	0.2[f]	0.3[f]	0.4[f]	0.7[f]	0.2	0.3	0.7	2.1	7.6
Chile	0.2[e]	0.8[e]	2.1	7.9	19.0	33.6	47.0	56.4	94.4	108.0	102.5	111.5	124.4
Colombia	3.7	6.5	13.6	17.0	21.5	28.4	38.7	53.3	72.1	99.0	129.4	169.2	196.7
Greece	15.4	24.1	54.2	70.1	84.4	104.4	124.8	156.0	202.8	276.2	331.1	421.6	506.5
Hong Kong	1.5	2.3	3.8	4.3	4.8	5.5	6.6	7.5	8.7	10.1	11.0	12.5	13.6
India	1.3	2.1	3.8	4.2	4.4	4.7	5.2	5.7	6.0	6.1	6.7	7.4	8.0
Kenya	2.3	3.9	5.5	5.9	6.6	6.3	7.3	8.4	9.3	10.4	11.2	12.3	12.9
Korea	19.7	61.3	164.6	213.0	285.6	387.2	518.0	618.5	721.9	836.1	980.9	1081.7	1189.7
Malawi	NA	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.7	0.5	0.5	NA
Mexico	7.9	10.4	22.6	31.7	38.2	39.2	45.3	58.2	76.0	119.9	177.8	288.7	447.5
Morocco	NA	4.3	5.8	6.7	7.0	7.8	7.9	8.1	9.3	10.1	10.7	11.5	13.0
Nigeria	0.1	0.1	0.2	0.3	0.3	0.3	0.5	0.6	0.7	0.7	0.8	0.9	1.0
Pakistan	0.8	1.0	2.4	2.7	3.3	4.2	4.3	4.0	4.3	4.9	5.7	7.0	7.7
Peru	10.9	18.6	39.4	50.2	60.8	83.2	121.3	281.5	382.9	684.3	1182.8	2088.1	4034.5
Portugal	8.0	13.2	40.4	50.2	60.5	71.6	81.7	106.1	125.6	149.4	178.4	210.8	2[illegible]
Singapore	1.0	1.0	1.9	2.0	2.0	2.1	2.4	2.7	3.2	3.6	4.0	4.5	[illegible]
Sri Lanka	0.9	1.1	1.8	1.8	2.6	3.7	3.2	3.2	3.4	4.2	4.9	6.2	6.4
Tanzania	NA	2.4	4.2	4.4	4.6	4.6	5.2	5.9	6.6	7.1	8.0	9.3	10.6
Zambia	0.3	0.4	0.6	0.9	0.8	1.0	1.1	1.2	1.3	1.3	1.4	1.7	2.3
Zimbabwe	0.5	0.5	0.8	0.9	1.0	1.1	1.2	1.4	1.6	2.0	2.3	2.6	2.8

Note: see notes to Table 2a.

Table 2c

Real Hourly Cost of Labor*
(Index: 1980 = 100)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Argentina	102.7	109.2	116.8	84.1	79.5	78.9	90.7	100.0	84.2	74.5	96.9	118.0	100.5
Brazil	55.1	59.6	75.4	81.0	82.9	91.6	96.1	100.0	101.4	112.1	100.8	100.1	108.0
Chile	70.7	120.8	78.1	82.6	96.0	110.0	114.0	100.0	189.7	142.7	108.5	98.4	94.0
Colombia	75.4	83.4	75.7	78.9	75.2	84.1	91.9	100.0	106.2	117.1	127.8	148.0	134.8
Greece	41.6	57.5	72.4	82.7	86.8	97.5	96.0	100.0	102.5	115.0	115.0	128.7	124.8
Hong Kong	55.2	69.2	74.8	81.4	86.7	94.8	100.1	100.0	101.8	107.2	109.8	111.0	116.9
India	66.1	77.4	82.1	98.8	94.0	99.8	101.4	100.0	98.8	98.0	98.1	98.6	91.0
Kenya	92.1	142.2	119.8	116.6	112.2	100.9	98.6	100.0	99.4	91.7	89.0	88.6	82.4
Korea	26.1	45.1	59.4	66.6	81.1	96.1	107.6	100.0	97.0	104.5	112.8	122.2	131.7
Malawi	NA	113.6	99.7	97.8	102.4	102.2	99.6	100.0	100.2	130.9	92.5	70.2	NA
Mexico	74.9	82.7	101.6	128.2	108.9	100.6	98.4	100.0	102.0	101.8	74.4	71.8	71.8
Morocco	NA	119.9	118.9	121.7	112.1	113.9	108.7	100.0	101.9	100.5	100.3	95.6	100.2
Nigeria	104.8	104.2	91.2	82.8	75.1	85.7	84.4	100.0	97.0	95.1	81.2	85.5	70.7
Pakistan	78.9	83.7	90.7	88.0	108.2	125.4	119.8	100.0	94.8	102.2	111.9	128.6	135.8
Peru	104.4	112.8	131.8	125.8	110.1	95.4	88.4	100.0	96.8	99.5	82.5	70.4	61.7
Portugal	54.8	67.9	104.1	109.4	108.7	100.1	92.4	100.0	101.4	99.8	98.8	98.0	97.2
Singapore	75.6	69.7	81.8	86.8	88.0	96.6	98.2	100.0	108.4	115.9	127.5	140.1	145.8
Sri Lanka	83.1	82.1	86.8	90.7	126.8	161.1	124.6	100.0	98.8	100.7	108.0	111.7	118.4
Tanzania	NA	152.2	140.5	136.9	130.2	115.5	115.1	100.0	88.5	74.9	68.2	88.9	48.5
Zambia	96.9	108.5	110.5	138.8	100.8	108.9	108.1	100.0	95.5	94.9	78.5	78.6	77.8
Zimbabwe	71.8	75.1	90.6	91.8	91.2	94.7	98.7	100.0	108.2	114.4	105.8	98.8	98.8

* Original figures expressed in domestic currency. The deflator used was the CPI.

Table 2d

Real Hourly Cost of Labor*
(Index 1980 = 100)

	1965	1970	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Argentina	57.4	83.2	87.2	57.0	59.6	66.2	79.3	100.0	82.1	54.1	65.6	88.7	76.5
Brazil	61.2	71.7	86.2	91.9	94.9	105.6	108.6	100.0	100.1	113.3	92.3	90.9	86.8
Chile	136.3	208.6	66.1	77.4	100.1	124.3	117.7	100.0	158.3	160.6	106.7	98.4	72.7
Colombia	88.2	102.9	74.1	75.5	75.5	84.6	90.2	100.0	109.2	119.3	128.0	140.6	131.7
Greece	46.6	64.8	75.7	86.9	91.0	102.0	100.8	100.0	101.3	118.5	119.1	124.8	124.2
India	79.3	92.6	96.3	107.8	103.5	112.2	109.5	100.0	94.5	93.8	94.7	97.2	98.6
Korea	25.1	53.5	60.4	69.7	85.7	104.1	116.1	100.0	97.7	106.8	120.2	132.3	144.8
Mexico	76.9	88.0	114.2	131.1	105.9	99.2	97.0	100.0	104.9	106.1	75.8	71.0	73.0
Morocco	NA	128.9	109.5	121.6	110.4	NA	105.8	100.0	97.5	94.8	98.7	98.3	91.0
Pakistan	88.0	89.4	93.1	94.7	109.0	126.7	121.4	100.0	95.6	104.7	113.7	126.7	126.8
Portugal	45.5	62.5	109.4	114.0	108.6	95.9	94.5	100.0	100.3	98.6	95.7	98.8	98.8
Singapore	NA	NA	105.8	103.4	108.5	105.0	106.1	100.0	118.0	130.9	151.4	171.7	183.0
Sri Lanka	NA	NA	122.1	117.4	136.8	166.9	132.1	100.0	88.5	106.8	99.5	100.2	121.7
Zambia	NA	105.2	123.8	150.9	111.5	118.3	108.7	100.0	108.4	98.9	88.4	81.1	75.0

* Original figures expressed in domestic currency. The deflator was the WPI.

Table 2e

Real Hourly Costs of Labor*

Index 1980=100

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Argentina	108.586	76.112	74.962	77.806	86.227	100.000	71.818	58.979	75.489	92.885	78.119
Brazil	95.724	102.005	108.529	118.848	112.280	100.000	107.101	118.120	78.717	85.842	88.640
Chile	45.633	59.091	78.882	87.884	96.878	100.000	151.764	121.826	73.065	61.402	40.521
Colombia	80.251	81.838	87.399	76.716	98.053	100.000	108.882	115.985	118.489	116.479	98.172
Greece	70.100	72.984	79.594	90.594	98.582	100.000	89.071	98.875	81.978	78.888	74.501
Hong Kong	77.871	81.692	88.433	92.981	94.842	100.000	98.180	98.494	81.881	83.245	87.994
India	95.864	93.869	92.451	95.823	97.022	100.000	95.078	74.345	78.081	88.382	89.425
Kenya	101.995	98.782	90.793	93.788	93.848	100.000	82.773	70.917	80.611	89.380	82.825
Korea	52.083	61.768	75.733	94.245	114.491	100.000	95.288	94.580	98.621	99.694	98.478
Malawi	93.012	82.576	88.145	88.591	90.702	100.000	92.295	104.521	72.488	83.085	NA
Mexico	110.195	114.828	81.883	80.781	85.518	100.000	110.828	70.884	47.458	52.417	52.142
Morocco	107.695	104.980	97.694	108.008	107.409	100.000	79.188	69.027	89.614	49.878	47.804
Nigeria	88.577	88.398	85.284	84.777	75.792	100.000	94.184	84.918	79.943	82.458	77.681
Pakistan	92.475	93.088	107.029	123.127	118.780	100.000	98.287	98.024	89.482	89.855	94.700
Peru	187.469	157.338	117.401	79.028	78.589	100.000	105.381	100.458	72.451	89.094	84.882
Portugal	118.686	114.255	99.436	94.148	98.987	100.000	89.894	77.148	83.558	84.894	85.298
Singapore	94.908	87.476	84.721	86.004	95.812	100.000	107.981	110.191	119.836	129.182	125.942
Sri Lanka	158.828	128.221	129.080	145.819	114.884	100.000	81.889	88.888	87.688	89.214	92.482
Tanzania	122.988	108.117	101.197	98.588	98.181	100.000	101.011	90.881	81.587	88.708	84.586
Zambia	108.229	121.845	91.882	102.200	108.021	100.000	88.781	78.208	81.782	80.025	48.421
Zimbabwe	98.105	92.120	91.915	85.840	98.788	100.000	104.514	102.485	88.758	78.814	89.781

*Nominal labor costs in each country divided by nominal labor costs in USA.

APPENDIX 3

The Labor Cost-Employment Trade-off

The purpose of this exercise is to analyze a labor demand function across countries and to observe the statistical performance of our labor cost data. We assume the existence of a labor demand derived from a technology in which labor is the only variable factor. Thus employment levels depend upon unit labor costs in terms of producer prices and real value added. The former variable corresponds to the contemporaneous product labor cost, which is expected to have a negative effect on employment because of the underlying assumption of expected-profit maximizing firms.[18]

The empirical model also allows for the existence of lags in adjusting employment to the change in independent variables, so that

$$(L_t - L_{t-1}) = \theta_t (L_t^* - L_{t-1})$$

where L_t and L_{t-1} are the actual levels of employment in periods t and t-1, L_t^* is the optimal (desired) employment level in period t, and $0 \leq \theta \leq 1$ is the adjustment factor.

Thus, the empirical model to relate employment to labor costs (w_t) and value added (q_t) is (in logs)

$$L_t = a_0 + a_1 w_t + a_2 q_t + a_3 L_{t-1} + \epsilon_t$$

where $a_i = A_i \theta$, A_i is the short run elasticity, $a_3 = 1-\theta$ and ϵ_t is a random error.

There are simultaneity problems surrounding estimation of this regression model. In fact, unit labor costs (or the wage component of total labor costs) may be determined endogenously through the play of supply and demand factors. However, that simultaneity is less likely to play a role when the demand is postulated to depend upon product labor costs as opposed to consumption labor costs (i.e., deflated through the CPI). An additional argument in the same direction is that open unemployment is usually high in LDCs, labor supply being flat over the relevant range. Consequently, the only endogeneity problem we will tackle through use of instrumental variables is that connected with the output variable.[19]

Only a subset of countries is considered, since the data base could not be completed for all the countries in the study. The employment and value added data used in this exercise were obtained from Bank files. The labor cost deflator used is the WPI for each country.

In six countries we obtain a negative and significant short-run labor cost elasticity, and in 9 a positive and significant output elasticity. In the former group elasticities range between -.03 and -.17, while in the latter, elasticities range from .05 to .44. In all the countries the adjustment lag is significant, thus producing different short and long run elasticities. In terms of long run elasticities, we also found significant variation across countries. First, in 8 countries, negative labor cost elasticities -- and in 10, positive output elasticities were statistically significant.[20] Second, the range of values is from -.04 to -.54 and from .53 to 2.30 respectively for labor cost and output.

This evidence suggests the existence of higher output elasticities than wage elasticities. India and Pakistan produce strange results with regard to signs. In general, further research would allow us to explore at

greater length the labor market structure underlying these general statistical findings. The model was also estimated adding the variable NWC/PY, were PY stands for per capita income, in order to account for the (negative) role of labor market distortions on manufacturing. We were able to identify clearly negative and significant parameters in only 4 countries (Colombia, Mexico, India and Nigeria).

Table 3a

Employment (L_t)-Labor Costs (w) Trade-Off

	w	q	L_{T-1}	ϵ_w	ϵ_q	$\bar{R}^2$	D.W.
Argentina	-0.115	0.502	0.782	-0.525	2.299	0.7287	2.13
	(-0.19)	(0.46)	(5.54)	(-0.89)	(1.71)	(18.01)	
Brazil	-0.153	0.338	0.716	-0.542	1.187	0.9909	1.88
	(-1.89)	(2.998)	(7.82)	(-3.97)	(5.18)	(649.2)	
Chile	-0.0843	0.427	0.343	-0.132	0.650	0.9945	1.95*
	(-1.64)	(3.04)	(1.87)	(-3.93)	(0.85)	(1071.7)	
Colombia	-0.139	0.23	0.653	-0.404	0.668	0.9993	1.47*
	(-2.74)	(2.39)	(5.204)	(-7.59)	(3.09)	(8288.16)	
Mexico	-0.030	0.4667	0.111	-0.04	0.530	0.9998	1.39*
	(-4.09)	(6.30)	(0.86)	(-8.37)	(4.09)	(24442.6)	
Greece	-0.1402	0.3502	0.224	-0.181	1.25	0.9998	1.01*
	-(3.308)	(5.28)	(1.72)	(-5.88)	(37.7)	(26080.1)	
Korea	-0.156	0.4425	0.360	-0.247	0.69	0.9982	1.57*
	(-1.60)	(3.03)	(1.72)	(-2.01)	(4.64)	(3214.09)	
India	0.175	-0.110	0.64	0.491	-0.317	0.9886	2.13
	(3.16)	(-1.47)	(4.70)	(6.27)	(-0.65)	(548.3)	
Pakistan	0.0152	0.052	0.570	0.046	0.121	0.7676	2.15
	(0.69)	(1.45)	(3.16)	(11.4)	(0.81)	(21.91)	
Sri Lanka	-0.0506	0.010	0.8485	-0.332	0.068	0.8798	2.31
	(-0.20)	(1.09)	(6.59)	(-1.59)	(5.36)	(44.94)	
Kenya	-0.1793	0.374	0.5804	-0.434	0.891	0.9839	2.53
	-(1.56)	(1.94)	(2.47)	(-3.01)	(1.81)	(367.95)	
Nigeria	0.0597	0.393	0.509	0.125	0.801	0.9726	1.93*
	(0.16)	(1.63)	(1.40)	(0.795)	(1.69)	(173.27)	

Note: Instrumental variables were used (instrument: per capita GDP), as well as maximum likelihood in case of the presence of serially correlated errors (countries indicated with (*)). For all the countries, we used 16 observations. The data used correspond to the (formal) manufacturing sectors.

ENDNOTES

1 The concept of labor earnings includes payment for time worked, payments for time not worked, and regular bonuses, thus not being exactly equivalent to the concept of wages.

2 The following items were considered in this study to compute non-wage costs of labor:

- Social Security Contributions
- Medical Insurance schemes.
- Contribution to Unemployment Compensation Funds. or Severance Compensation Funds.
- Vacation bonuses and other non-regular bonuses.
- Days of vacation.
- Payroll Taxes or Employment Taxes.
- Contribution to other funding schemes (housing, education, transportation, etc.).

Because of data problems, we do not include in our NWC data the actual cost of firing workers and the liability for accidents; particularly for Latin American and European countries this may result in an important underestimation of the actual NWC of labor.

3 Besides the information provided by the International Labor Office (ILO) and the Bureau of Labor Statistics (BLS), we relied upon information provided by some private groups, particularly the Bulletins prepared by Price Waterhouse.

4 Appendix 1 describes the main sources utilized for the different countries covered in this study.

5 In order to express monthly or weekly data and when no information was available on hours worked in manufacturing, we assumed 42 hours per week. This is, of course, a simplification that must be taken into account in interpreting the results.

6 Appendix 2 contains the original figures of labor costs in domestic currency, making it possible to convert them into dollars through alternative exchange rates.

7 Until now cross country analyses of labor costs have dealt only with industrial economies. This is the case of the works by Ray (1972, 1976, 1984), Stekke & Ghymers (1973), Asakanas & Levcick (1983), Artus (1984), Hart (1984) and Saunders & Marsden (1981).

8 A few preliminary efforts have, however, been done in the case of some LDCs. For instance, Salazar-Carrillo (1982) studied cross-sectional wage differentials in Latin America's manufacturing sector. Similarly, Strassman (1985) and Ehasan (1981) have been concerned with labor cost

comparisons in the construction industry. In general, there is not any comprehensive study on this issue for LDCs with regard to time trend analyses.

9 A related research study [Riveros (1989)] examines the statistical impact of labor costs on manufacturing exports and the role played by distortionary labor market intervention. A major finding refers to the important role of labor costs and of distortionary non-wage costs in explaining observed changes in manufactured exports.

10 I.e., we divided per capita GDP by 2080, which is our assumption regarding hours worked per year. This indicator is affected by the share of agriculture, a factor which should be considered when comparisons are done.

11 These are, the observations we obtain by looking at the year 1985.

12 In the Appendix we include a similar series deflated by the national CPI and WPI, which are interpreted as consumption labor costs and production labor costs, respectively.It is important to note that labor costs deflated by the WPI-USA are indicative of real labor costs relative to the average cost of production in the USA. Table 2c in Appendix 2 presents an index of unit labor costs for the set of LDCs in terms of unit labor costs in the USA, which allows us to examine patterns in relative changes in the actual competitiveness of labor cost levels.

13 The criteria for this ranking are: 1) Number of months' salary to be paid per year of service; 2) Number of months' notice; 3) The necessity to provide (or not to provide) proof of just cause; 4) Degree of government involvement in the legal process.

14 This is the hypothesis maintained for the test reported in Riveros (1989) on the effect of NWC on exports.

15 Figures in Table 6 depict the importance of agricultural employment in LDCs, and the share of manufactured exports in total exports.

16 In fact, they found that multinationals locate more labor-intensive activities to low-labor cost countries.

17 Our data source for manufacturing output corresponds to UNIDO data base, which contains information on value added, wages and employment computed on the basis of manufacturing censuses. In general terms, it is considered that this information is fairly representative of formal sector production, given that the methodology of firm-based surveys implies coverage of only relatively large firms. Per capita production corresponds to value added divided by number of employees.

18 A more sophisticated treatment of this problem would also require consideration of the role played by the existence of high serial correlation in real labor cost levels throughout time. In fact, employment should also respond negatively to the contemporaneous labor cost if a wage change is considered as a permanent change by firms; the

existence of increasing hiring-firing costs will determine that entrepreneurs do not adjust employment significantly if the change in labor cost is considered transitory.

19 Another interesting feature of the model is that the higher the tradable component in the price deflator for wages (WPI), the more possible it is to interpret the ratio of labor cost to WPI as the ratio between prices of nontradables and tradables (see also Dornbusch, 1974).

20 We used an asymptotic approximation to the standard deviation of a ratio between two random variables. See Kendall & Stuart (1960).

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